GOLOVANENKO, I.M.

Scientific and technical conference in Donetsk. Ogneupory 27 no.10:479-480 '62. (MIRA 15:9)

1. Gosudarstvennyy nauchno-ekonomicheskiy sovet Soveta Ministrov SSSR.

(Refractory materials--Congresses)

GOLOVANENKO, I.Z. [Holovanenko, I.Z.], brigadir traktornoy brigady

Filter for supplementary purification of fuel. Mekh. sil'. hosp. 14 no.7:28 Jl '63. (MIRA 17:2)

1. Kolkhoz "Ukraina" Kagarlitskogo rayona Kiyevskoy oblasti.

GOLOVANENKO, I.F.

Types of hemoglobin in young sturgeons. Dokl. AN SSSR 151 no.5: 1236-1237 Ag '63. (MIRA 16:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut ozernogo i rechnogo rybnogo khozyaystva. Predstavleno akademikom Ye.N. Pavlovskim.

(HEMOGLOBIN) (STURGEONS)

GOLOVANENKO, S. A.

Golovanenko, S. A.

"Investigation of the Plasticity and Temperature Conditions of the Hot-Working with Pressure of Spring-Steel Alloys." Min Higher Education USSR. Moscow Order of Labor Red Banner Inst. of Steel imeni I. V. Stalin. Moscow, 1955. (Dissertation for the Degree of Candidate in Technical Sciences.)

Knizhnaya Letopis'; No. 27, 2 July, 1955

GOLOVANENKO, S.A.

137-58-1-1825

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 249 (USSR)

AUTHOR: Golovanenko, S.A.

TITLE: An Investigation Into the Deformability of Certain Spring Alloys (Issledovaniye deformiruyemosti nekotorykh splavov dlya pruzhin)

PERIODICAL: Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii, 1956, Nr 15, pp 274-288

ABSTRACT: An investigation has been made into the deformability of 3 dispersion hardening alloys. K40NKhMT, 36NKhT, and N35KhMV, which are intended for the making of springs. The ductility of specimens 10 mm in diameter and of a design length of 50 mm investigated at 1250± 5° on an IM-4R tensile testing machine at a rate of loading of 1.1 mm/min and also by torsion testing on a special installation in which the rate of testing was 24-500 rpm. The testing of round specimens of 10 mm diameter with a circular notch was performed on an impact testing machine with 40 mm spacing between supports, and the ductility thus determined was characterized by the magnitude of the a_k. Metallographic investigation of K40NKhMT alloy confirmed that reduction in ductility at 1000-1050° is explained by phase transformation, which

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137-58-1-1825

An Investigation Into the Deformability of Certain Spring Alloys

accelerates as deformation proceeds. The following intervals of ductility were found to exist for these alloys: 1180-1150° for K40NKhMT, 1150-950° for 36NKhT, and 1150-950° for N35KhMV. The investigations showed that a_k does not fully describe the ductility of the alloys and cannot be employed to determine the intervals within which hot pressworking may be performed. Torsion testing provides results closer to empirical data obtained in forging and rolling practice.

Z.F.

1. Alloys--Deformation 2. Alloys--Test equipment 3. Alloys--Test methods
4. Alloys--Test results

Card 2/2

Golovanenko, S.A.

GROMOV, N.P., kand. tekhn. nauk; GOLOVANENKO, S.A., kand. tekhn. nauk; KABATKIN, N.M., inzh.

New thermostatic bimetals. Vest. elektroprom. 27 no.8:32-33 Ag '56. (MLRA 10:9)

1. Institut pretsizionnykh splavov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Thermostat) (Metals)

GOLOVANENKO, S.A., referent.

New magnetic and heat resistant alloys. Biul. TSNIICHM no.16:59-60 '57. (MIRA 11:5)
(Heat resistant alloys--Electric properties)

129-2-9/11

AUTHOR: Golovanenko, S.A., Candidate of Technical Sciences.

TITLE: New High Temperature and Magnetic Alloys, Alphenol and Termenol (Novye zharoprochnye i magnitnye splavy al'fenol and termenol)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, No.2, pp. 50 - 51 (USSR).

ABSTRACT: The properties of these alloys, developed by the Artillery Laboratory of the US Navy and the Ford Research Institute, are described on the basis of information published in USA and Great Britain.

AVAILABLE: Library of Congress

Card 1/1

GOLOVANENKO, S.A., referent.

Treating molybdenum in an inert atmosphere (from "Steel" no.17, 1956). Tsvet. met. 31 no.5:94 My '58. (MIRA 11:6)
(Molybdenum)

18.5000,18.3100

77456
SOV/133-60-1-17/30

AUTHORS: Bakhtinov, B. P., Golovanenko, S. A. (Candidates of Technical Sciences)

TITLE: Rolling and Pipe Production. Methods of Rolling Jointly With Continuous Pouring

PERIODICAL: Stal', 1960, Nr 1, pp 54-58 (USSR)

ABSTRACT: This is a brief review of non-Soviet attempts to combine the casting of metal with rolling as a way to automation of the whole process, and description of Soviet work in this direction. The authors state that the question of "ingotless rolling" was given some attention as early as the 19th Century, but that the maximum development work in this connection was done in the USSR. The advantages of the process of continuous casting were already proven. The introduction of this process in the industry will in some cases eliminate the construction of blooming mills. The authors mention the Italian firm Propertsi and their installation for continuous casting of nonferrous metals with subsequent rolling of same into wire. They mention

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other similar installations for making aluminum wire (in U.S., France, Italy, Spain, India, Australia, U.K., and Sweden). They refer to an attempt of designing a continuous pouring and rolling mill for rolling steel sheets by the Atlas Steel in Welland, Canada. In the USSR the first combining of the continuous casting with a rolling mill, designed by the Central Design Office of the Ministry of Metallurgical Machine Building (TsKBMM) and the All-Union Scientific Research Institute of Heavy Machinery (TsNIITMASah) as one unit, was accomplished at the Plant "imeni 1st May" (City of Kalinin). It was an installation for manufacturing hardened steel balls of 40-60 mm diameter for grinding mills. The question of combining the rolling mill into one flow with the machine for continuous casting of metal was brought forward by A. I. Tselikov during the Convention of Metallurgical Machine Building in 1958. It was then decided to direct the design efforts along this line. At the present time the All-Union Scientific Research Institute of Metallurgical Machinery (VNIIMETMASh), in cooperation

with the Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM), is developing a design of the shops in which a conveyor machine of continuous casting (of tilted type) of the M. F. Goldobin system, producing a 140 x 140 mm billet, is combined with a special continuous rolling mill for rolling the ordinary carbon steel rounds (10-20 mm) and winding them into 500-kg coils. There are several alternate designs of these shops made to meet the local conditions of various plants. One of them is given in Fig. 1. For rolling of small shapes from ordinary steel, the authors recommend the application of the universal planetary rolling mill of the A. I. Tselikov and V. V. Nosal' system (Author's Certificate Nr 107396). It is suitable for rolling the rectangular, square, or round billets (100-200 mm size) into the square billets of 20-50 mm size. This mill is an original improvement on a known planetary mill for rolling billets (simultaneously for the height and for the width by means of small-diameter working rollers with 4 backing-up rolls of large diameter). The universal planetary

Rolling and Pipe Production. Methods of Rolling Jointly With Continuous Pouring

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SOV/133-60-1-17/30

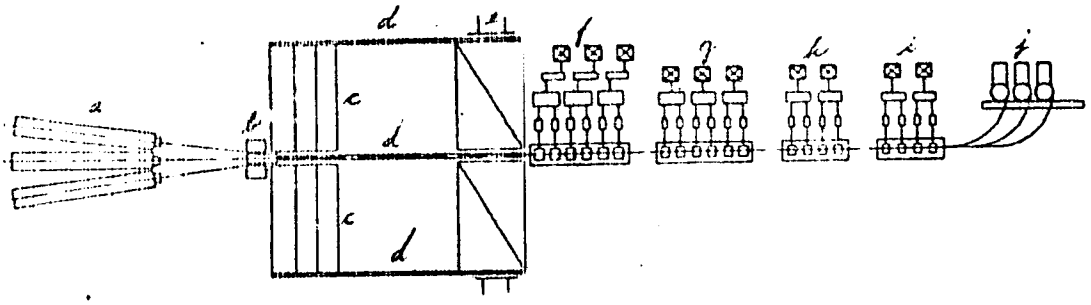

Fig. 1. A layout of the equipment in the shop producing rolled wire of 10-20 mm diameter from 140 x 140 mm billets made by continuous casting on a conveyor-type installation: (a) three installations of continuous casting; (b) gas cutter and shears (right and left); (c) pull-off transfer; (d) roller conveyor; (e) continuous furnace with pushers; (f) reduction group; (g) roughing; (h) semifinish; (i) finishing group; (j) coilers.

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mill allows to produce in one stand a square billet 20-50 mm with reduction of 20 to [illegible]% in one pass. It is advisable to install (immediately after the planetary mill) a continuous-shape mill of 5-7 stands, which will produce the most popular shapes (round, square, strip, hexagonal, angles, etc.) (see Fig. 2). After the continuous-shape mill there are installed the flying shears, a cooler with shears for cold cutting, and the straightening machines (see Fig. 3). In high-productivity shops it is advisable to install continuous-shape mills (instead of universal planetary mill) with 12-16 stands, with horizontal and vertical rolls similar to the ones installed at the Makeyevka, Krivoy Rog, and Chelyabinsk Plants (Makeyevskiy, Krivorozhskiy, i Chelyabinskiy zavody). Figure 4 shows the layout of the main equipment for rolling the periodical reinforcing shapes. The same layout is applicable for production of square and round shapes not requiring high surface finish. Rolling from the ordinary steels of small shapes; periodical profile reinforcing shapes and round rods; production of strips and bent profiles;

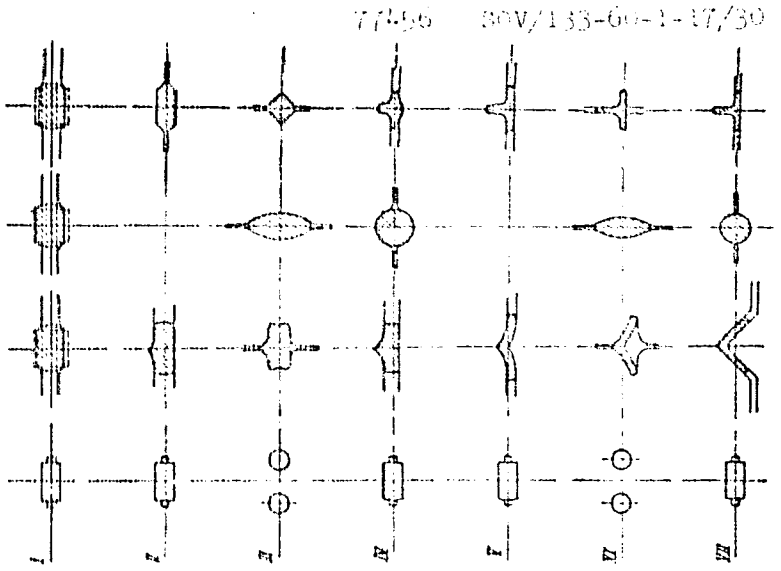

Fig. 2. A diagram of roll pass design for angle, round, and tee shapes in 7-stand continuous mill (after the planetary mill).

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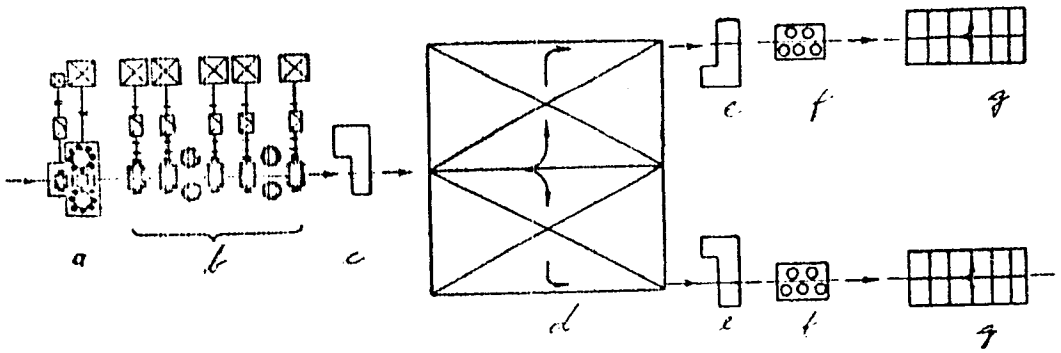

Fig. 3. A layout of main equipment of shop for rolling small shapes from the billets obtained by continuous casting: (a) universal planetary mill; (b) continuous-shape mill; (c) flying shears; (d) coolers; (e) press-shears; (f) roller straightening machine; (g) collecting pockets.

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Rolling and Pipe Production. Methods of Rolling Jointly With Continuous Pouring

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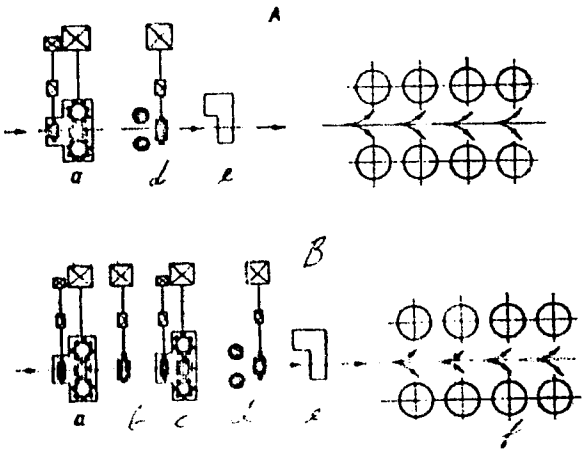
SOV/133-60-1-17/30

Fig. 5. A schematic layout of equipment for rolling wire with one universal planetary mill (A), and with two such mills (B). (a) and (c) planetary stands; (b) intermediate stand; (d) continuous two-stand mill; (e) shears; (f) coiler.



Card 8/9

rolling of thick sheets; rolling of thin sheets; rolling of medium and thin sheets from alloyed steels are described. Referring to the rolling of thick sheets from ordinary steels, the authors state that the cast slabs with rounded edges are heated in the regular continuous furnaces and rolled on the usual two-stand tandem mill, similar to the 2,250 and 2,800 mm mills used at the Alchevskiy Metallurgical Plant in Voroshilovsk (Alchevskiy metallurgicheskiy zavod). There are 5 figures; and 7 references, 3 Soviet, 1 German, 1 unidentified, 2 U.S. The U.S. references are: Iron Age, 1954, Vol 174, Nr 19, pp 113; and Iron and Steel Engineer, 1955, Nr 11, p 78.

ASSOCIATION: Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM)

S/137/61/000/008/024/037
A060/A101

AUTHORS: Borodkina, M. M., Golovanenko, S. A., Sol'ts, V. A.

TITLE: Structural transformations in the alloy K40HXM (K40NKhM) in the region of temperatures of hot deformation

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1961, 21, abstract 8Zh146 ("Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii", 1959, no. 22, 71-80)

TEXT: A determination was carried out of the mechanical properties at room temperature after various heat-treatments, of the mechanical characteristics at high temperatures, and of the electrical resistivity. Microstructure, X-ray crystallographic and phase analyses were carried out. It was established that the alloy K40NKhM undergoes structural transformations at temperatures $\leq$ 1,050°C, connected with decomposition of the solid solution and the separation of a carbide of the type $(Cr, Fe, Mo)_{23}C_6$. The decomposition proceeds most intensely under deformation in the range 1,050 - 900°C, which may lead to the formation of cracks under hot deformation. Therefore the temperature of the end of the hot deformation of that alloy should be $\geq$ 950°C.
[Abstracter's note: Complete translation] L. Vul'f

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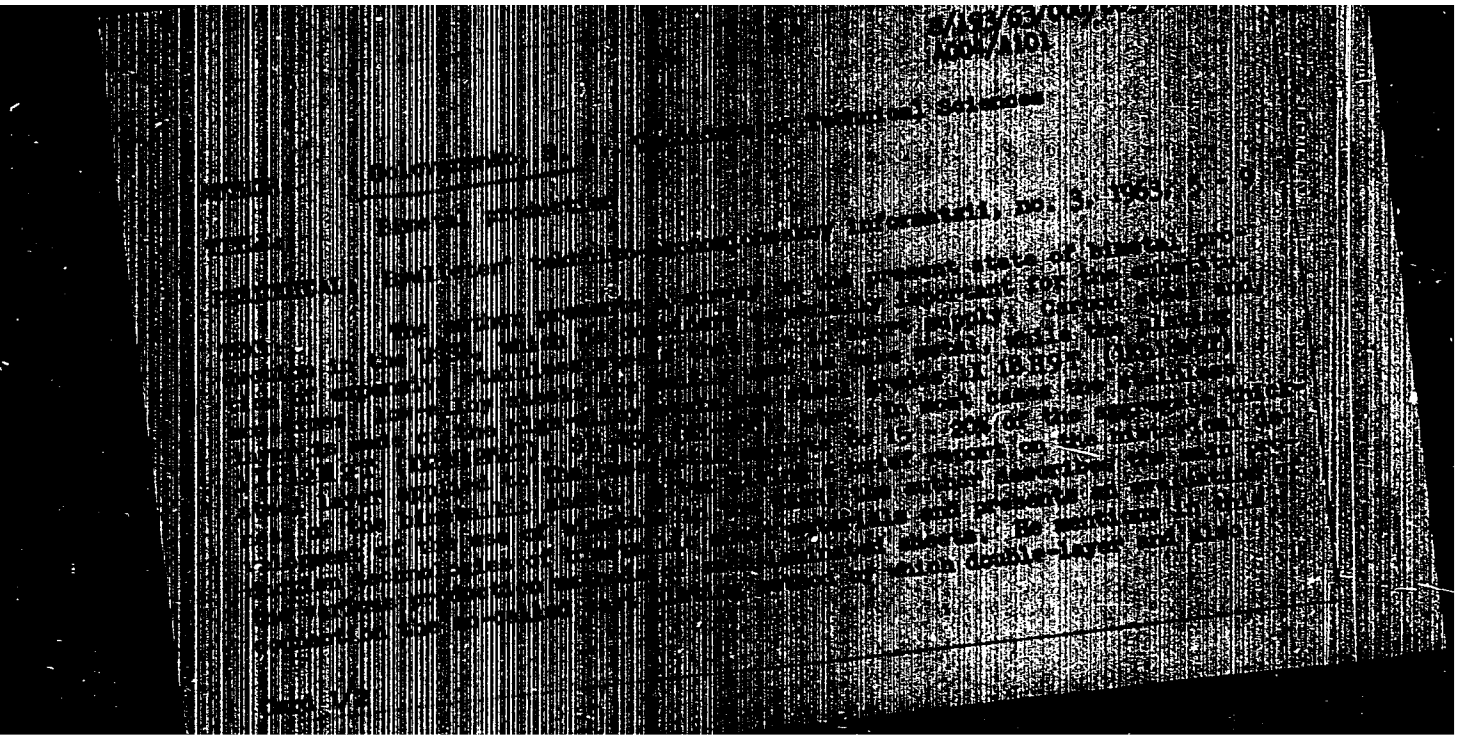

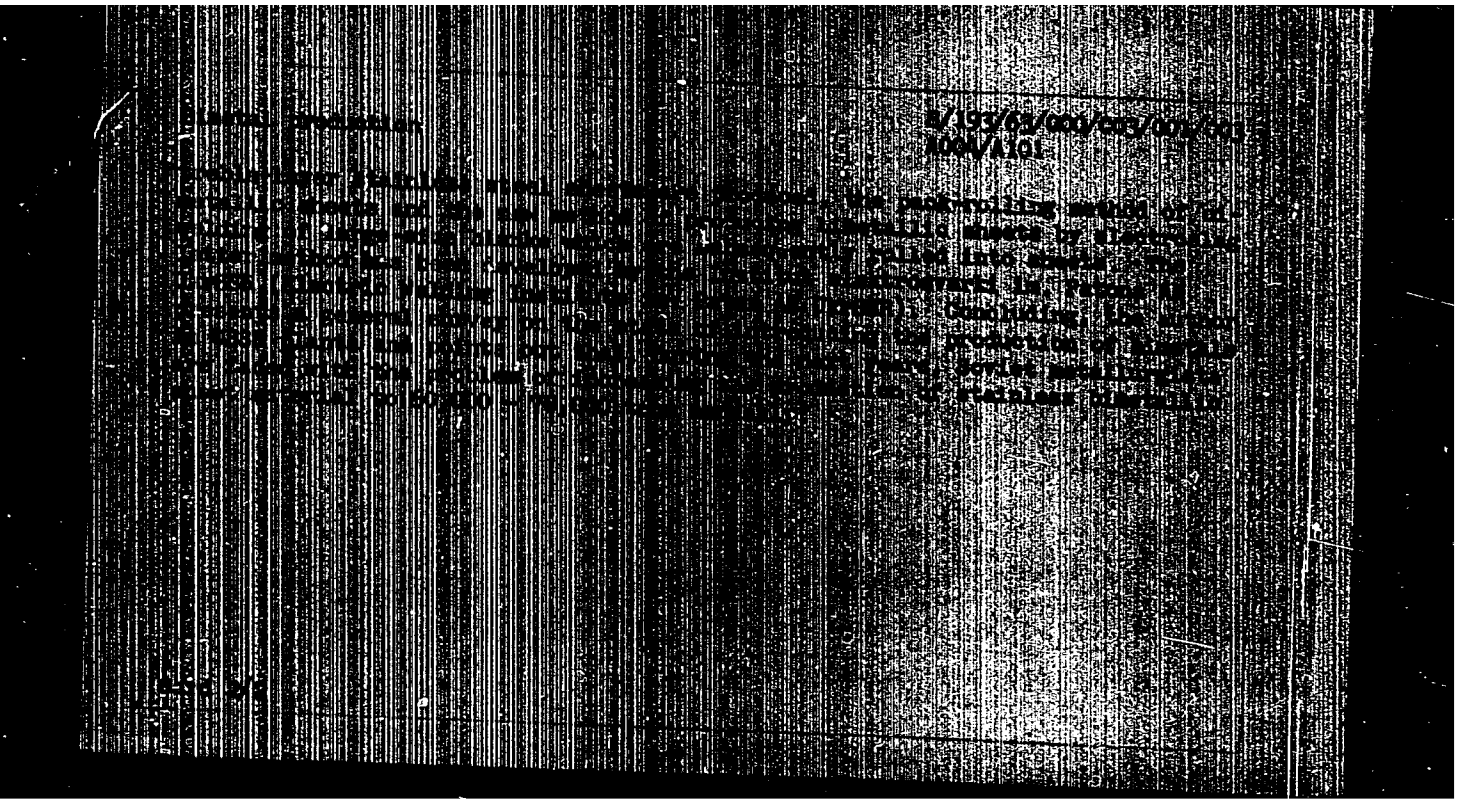

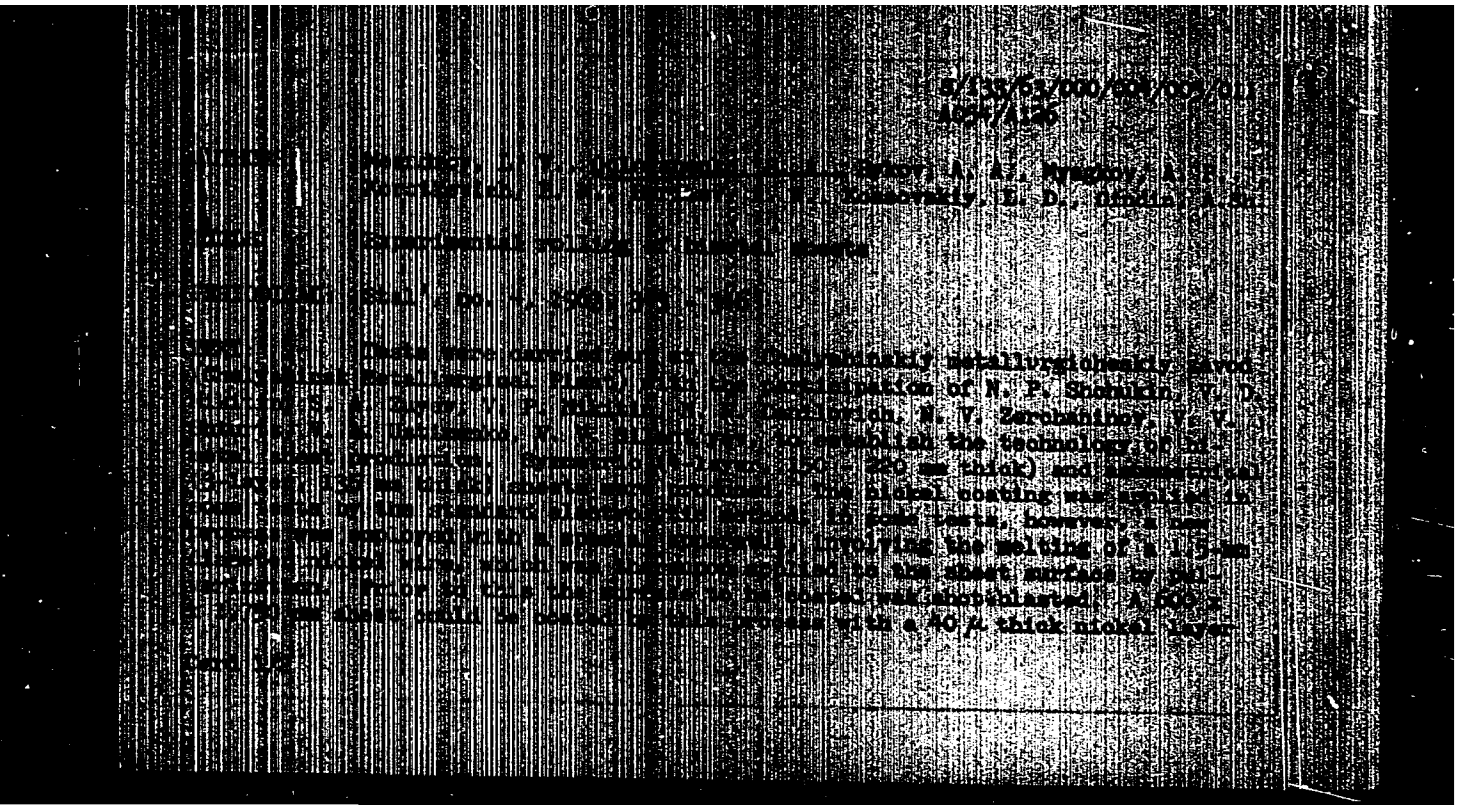

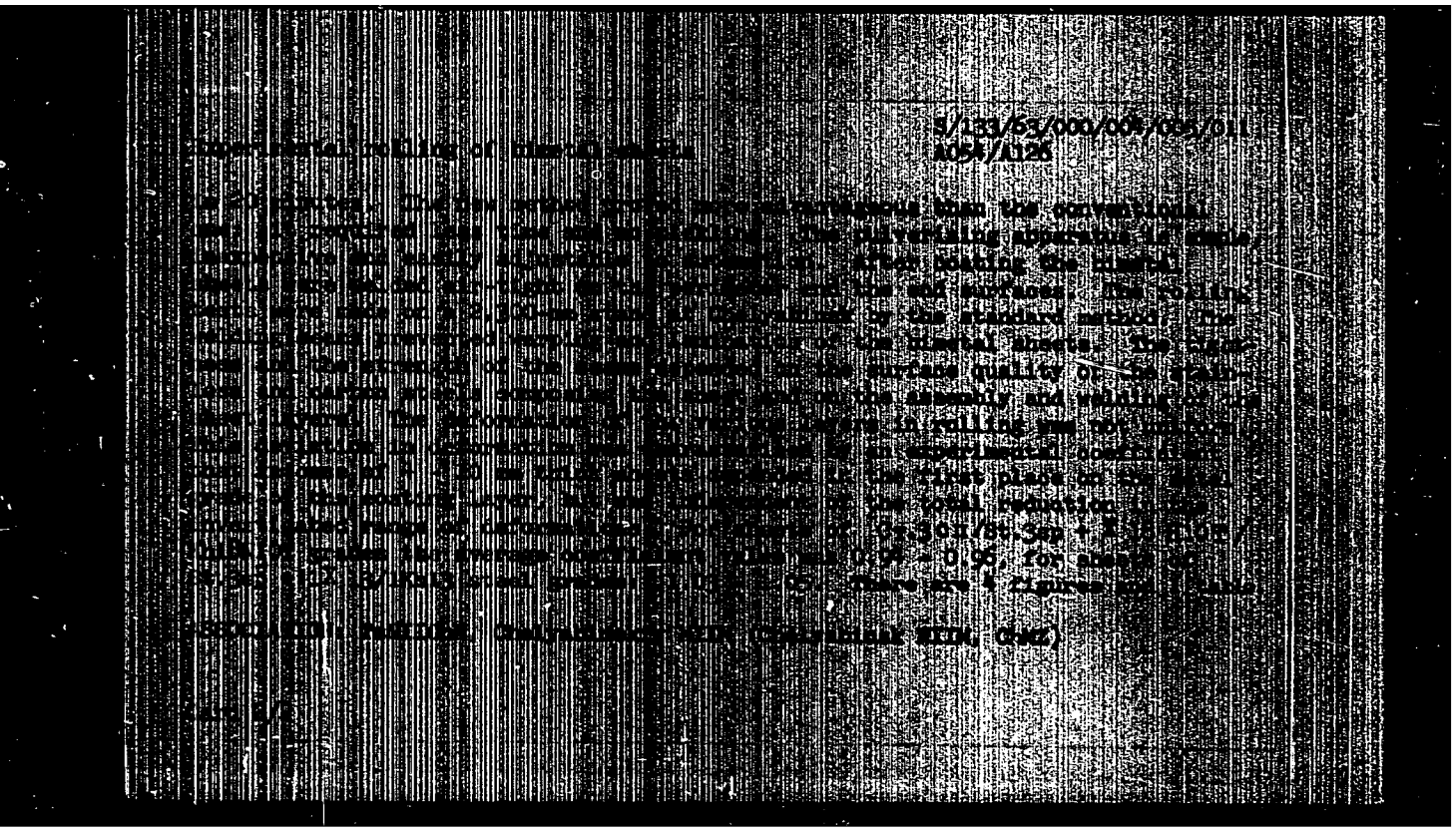

GOLOVANENKO, S.A.; CHERNOV, A.N.; SAPOZHNIKOV, V.M.; SINITSYN, V.G.; GULYAYEV, V.V.

Extrusion of bimetal shapes. Kuz.-shtam. proizv. 5 no.10: 7-9 O '63. (MIRA 16:11)

ACCESSION NR: AP4000984 S/0182/63/000/011/0007/0010

AUTHOR: Golovanenko, S. A.; Chernov, A. N.; Gulyayev, V. V.

TITLE: Hot extrusion of shapes from steels and alloys

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 11, 1963, 7-10

TOPIC TAGS: hot extrusion, shape extrusion, steel shape extrusion, alloy shape extrusion, steel extrusion, alloy extrusion, extrusion pressure, extrusion temperature, extrusion constant, flow stress, extrusion speed, extrusion rate, stainless steel extrusion, heat resistant alloy extrusion, extrusion lubricant, glass lubricant

ABSTRACT: A series of shapes (see Fig. 1 in the Enclosure) of the difficultly workable steels (cross-sections of 2.0-11.9 cm^2) St. 3, Kh18N9T, 1Kh15N24V4T, and the alloy EI437B were obtained under semi-technical conditions by hot extrusion at 800 and 1500 metric tons. The extruded profiles were characterized by purity equal to that of hot-rolled shapes and high mechanical properties. While studying the effect of the extrusion rate, it was proven that extrusion rates above 100 mm/second markedly decrease the cooling of the billet and improve the working conditions of the glass lubricant. In this way, the strain of extrusion was reduced and, to some extent, the corrosion resistance of the die was increased. A special heat resistant alloy is recommended for extrusion of

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ACCESSION NR: AP4000984

complicated profiles. For extrusion of simple profiles, the steel R18 is recommended as satisfactory for the production of dies. The resistance properties of materials used for the production of matrices have been evaluated. Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: TsNIICHM

SUBMITTED: 00 DATE ACQ: 30Dec63 ENCL: 01

SUB CODE: ML NO REF SOV: 001 OTHER: 000

Card 2/2

MEANDROV, L.V.; GOLOVANENKO, S.A.; TARLINSKIY, D.I.; BYKOV, A.A.

Pack rolling of two-layer stainless [redacted]. Biul.tekh.-ekon.inform. Gos.nauch.-issl.inst.nauch.i tekh.inform. 16 no.8:6-9 '63. (MIRA 16:10)

GLADYREVSKAYA, S.A.; MEANDROV, L.V.; GOLOVANENKO, S.A.; BYKOV, A.A.; KLINOV, I.Ya., doktor tekhn. nauk, prof., retsenzent; BLAGOSKLONOVA, N.Yu., inzh., red.

[Two-layer steel in chemical machine building] Dvukhsloinye stali v khimicheskom mashinostroenii. Moskva, Mashinostroenie, 1965. 151 p. (MIRA 18:5)

PLEKHANOV, P.S.; OOLOVANENKO, S.A.; KOBYZEV, V.K.; BULAT, S.I.; MIL'TO, Yu.R.; RIAZANOV, D.G.; BARANOVSKAYA, M.I.

Mastering the rolling of bimetal shapes for the agricultural machinery industry. Stal' 25 no.10:922-927 O '65. (MIRA 18:11)

1. Kuznetskiy metallurgicheskiy kombinat i TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I.P. Bardina.

L 36139-66 EWP(e)/EWT(m)/EWP(v)/T/EWA(k)/EEC/EWA(h) IJP(c) JD/HM/HW

ACC NR: AT6016765 (N) SOURCE CODE: UR/2776/65/000/042/0092/0100 42 40 B+1

AUTHOR: Chernov, A. N.; Golovanenko, S. A.; Gulyayev, V. V.

ORG: none

TITLE: Features of the fabrication of bimetal shapes by the hot pressing method

SOURCE: Moscow. Tsentral'nyy nauchno- issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 42, 1965, Proizvodstvo bimetallov (Production of bimetals), 92-100

TOPIC TAGS: chromium steel, nickel steel, bimetal, metal extrusion, metal pressing / Kh18N9T steel, St. 3 steel

ABSTRACT: The article describes the experimental study of the hot pressing of bimetal shapes performed at the Scientific Research Institute of Ferrous Metallurgy in 1963. The technique employed was that of direct extrusion in an 800-ton vertical hydraulic press, from a container with an inside diameter of 80 mm. Rods measuring 50-25 mm in diameter, with various thickness of cladding layer, were thus produced from such materials as, chiefly, St. 3 steel as the core and Kh18N9T Ni-Cr steel as the cladding sheath. The extrusion was performed on using a container heated to 400°C and a die heated to 250-300°C. The pattern of distribution of the cladding layer along the length of the bimetal rods was investigated by comparing the variation in the cross-

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L 36139-66 2
ACC NR: AT6016765

-sectional area of the base-metal core under various conditions of extrusion and correlating it with the formulas for the volumetric content of the cladding and base materials. It was thus found that the flow pattern of metal through the die hole is a major factor in determining the lengthwise pattern of distribution of the cladding sheath and hence also the geometry of the base-metal core; it can be optimized by retarding the flow of the core metal during the initial stage of extrusion. In view of the considerable advantages of the hot pressing of bimetal shapes as compared with their hot and cold rolling, it is expedient to organize this pressing on an industrial scale. This will make it possible to: 1) expand the current variety of bimetals; 2) obtain bimetal shapes with various combinations of metals, as well as with intricately shaped cross sections which cannot be obtained by rolling; 3) produce small lots of bimetal shapes at lower cost compared with rolling: 4) reduce by 40-50% the unit consumption of expensive and scarce metals and alloys. Orig. art. has: 6 figures, 1 table, 2 formulas.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 005

Sheath Rolling

Joining of Dissimilar Metals

Card 2/2

L 36140-66 EWP(e)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HM

ACC NR: AT6016766 (N) SOURCE CODE: UR/2776/65/000/042/0101/0106

AUTHOR: Chernov, A. N.; Golovanenko, S. A.; Gulyayev, V. Y.

ORG: none

TITLE: Investigation of the bonding strength of layers in hot-pressed bimetal

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 42, 1965. Proizvodstvo bimetallov (Production of bimetals), 101-106

TOPIC TAGS: chromium steel, nickel steel, metal pressing, adhesion, metal bonding, bimetal, metal cladding / St. 3 steel, Kh18N9T steel

ABSTRACT: By contrast with rolling, during pressing the core and sheath of a round bimetal shape get bonded together simultaneously over the entire contour in the presence of a uniform distribution of radial compressive stresses in the area of deformation. As a result, during pressing the shape of the core remains virtually undistorted and the adhesion (bonding) between the core and sheath is greater. In this connection, the authors investigated the strength of the adhesion of sheath to core for bimetal rods of St. 3 steel and Kh18N9T Cr-Ni steel produced by hot pressing in an 800-ton vertical hydraulic press. To this end, the rod specimens were subjected to core-extrusion and twisting tests. The extrusion tests and twisting showed that shear

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resistance depends not only on the degree of relative reduction in area but also on the content of the cladding layer. Thus, for rods of 25 mm diameter subjected to pressing with a 91% relative reduction in area, shear resistance increases with increase in volumetric content of cladding layer (Fig. 1). Reason: as the content of the

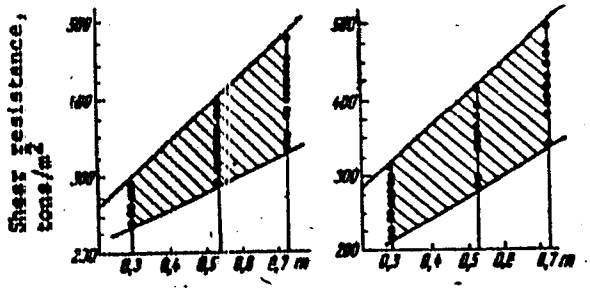

Fig. 1. Shear resistance as a function of volumetric content m of the cladding layer:

a - during extrusion of core; b - during twisting

L 36140-66
ACC NR: AT6016766 2

hard component increases, the pressure that must be exerted on the bimetal also increases and this, in its turn, contributes to increasing the adhesion between the layers. Adhesion strength is also markedly affected by such factors as the quality of surface treatment and the techniques of the assembling and welding of the original bimetal blanks. On the basis of these tests it may be concluded that the minimum required strength of the bonding between the layers, which for bimetal sheets of St. 3 and Kh18N9T steels amounts to 15 kg/mm^2, can be attained for rods with even a relatively thin cladding layer (m = 0.3) by applying a relative reduction area amounting to 70-80%, which corresponds to reduction by a factor of 3.3-5.0. As the volumetric content of the hard component (cladding material) increases from 0.3 to 0.7, bonding strength increases 1.3-1.4 times. Orig. art. has: 5 figures.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 002

Joining of Dissimilar Metals

Card 3/3

L 36136-66 EWT(d)/EWT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l) IJP(c)
ACC NR: AT6016762 JD/HM/HW(N) JT SOURCE CODE: UR/2776/65/000/042/0059/0063

AUTHOR: Golovanenko, S. A.; Ustimenko, V. A.; Kovynev, M. V.; Zelichenok, B. Yu.; Mul'ko, G. N.

ORG: none

TITLE: Rolling of steel-monel bimetal plate in a "2800" mill

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 42, 1965. Proizvodstvo bimetallow (Production of bimetals), 59-63

TOPIC TAGS: killed carbon steel, monel alloy, plate mill, bimetal, metal cladding, chemical plant equipment / VSt. 3sp. carbon steel, NMZhMts-28-2.5-1.5 monel alloy, "2800" plate mill

ABSTRACT: To verify the possibility of the mass production of bimetal plate (sheet of steel clad with sheet of monel) as well as to construct from this plate experimental models of petroleum-refinery apparatus, a pilot-industrial batch (4 tons) of such plate was rolled in a "2800" plate mill of the Orsk-Khalilovka Metallurgical Combine, for the first time in the USSR. The base layer used was VSt. 3sp killed carbon steel (0.17% C, 0.37% Mn, 0.22% Si, 0.05% Cr, 0.27% Ni, 0.08% Cu, 0.026% S, 0.012% P), and the cladding layer was NMZhMts-28-2.5-1.5 monel alloy with a chemical composition meeting the All-Union State Standard GOST 492-52. The sheets were welded

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L 36136-66

ACC NR: AT6016762

together into laminated strips measuring 191x1000x1810 mm and, prior to their rolling, heated in a continuous furnace for 3 hr. After this, they were rolled under conditions similar to those of the rolling of ordinary steels, in breakdown and finishing stands with rolls of 1100-mm diameter, with final rolling to a thickness of 20 mm in a four-high finishing stand with rolls of 800/1300 mm diameter. During the rolling the current intensity in the armatures of the motors of the two-high breakdown stand was oscillographically recorded and the findings were used to calculate the torque and the pressure exerted by the metal on the rolls during the individual operations. These calculations showed that the maximum rolling stress during the rolling of steel-monel bimetal is 1930 tons, which is substantially below the maximum permissible stress for the rolls (2300 tons). Tests established that the properties of such plate definitely meet the requirements posed to this material by the petrochemical machine building industry and the cost of such plate is, even under conditions of experiment, 30-40% lower than that of solid monel plate and, moreover this reduces the consumption of monel to one-half or one-third as compared with solid monel plate. Thus, it is feasible and expedient to organize the rolling of steel-monel bimetal plate in ferrous metallurgy plants. Orig. art. has: 1 figure, 2 tables, 3 formulas.

SUB CODE: 13, 11 / SUBM DATE: none

Joining of Dissimilar Metals

Card 2/2

L 04665-67 EWT(m)/EWT(t)/ETI IJP(c) JD
ACC NR: AP6007109 SOURCE CODE: UR/0129/66/000/002/0039/0040

AUTHORS: Golovanenko, S. A.; Maslenkov, S. B.

ORG: TsNIIChERMET

TITLE: Investigation of diffusion in a bimetal with a varying concentration of silicon

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 2, 1966, 39-40

TOPIC TAGS: bimetal, metal diffusion, thermal diffusion, silicon, transformer steel

ABSTRACT: The diffusion of silicon in a trilayered steel ribbon from the inner layer to the two outside layers was studied. The study was initiated to determine the optimum annealing condition which insures a uniform distribution of silicon throughout the entire ribbon. The silicon distribution was determined by x-ray analysis. The microstructure of ribbon was also determined, and the experimental results are presented graphically (see Fig. 1). It was found that complete homogeneity of silicon distribution in the triple-member ribbon of 0.35-mm thickness is achieved over a short time interval at 1100C. The authors conclude that the cold rolling of many-layered ribbons, followed by annealing and thermal diffusion, yields homogeneous ribbons containing 4% or more of Si. It is recommended that this method of silicon steel ribbon production be adopted for the manufacture of transformer steel.

Card 1/2 UDC: 539.12.172:621.9-419

L 04665-67
ACC NR: AP6007109

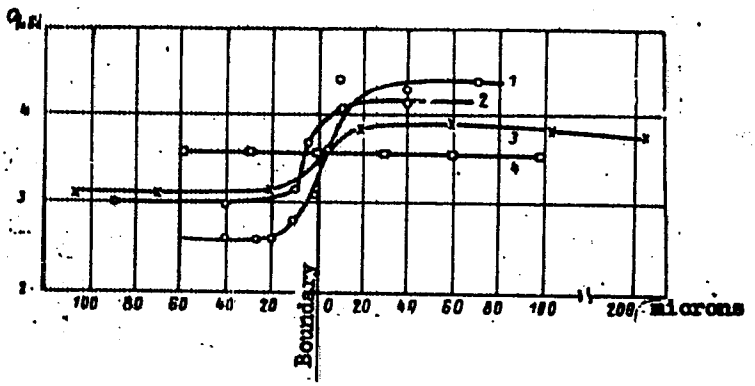


Fig. 1. Distribution of silicon in the cross section of the trilayer ribbon of transformer steel. 1 - hot rolled state, thickness 2.5 mm; 2 - the same as 1 after annealing at 800C for 2 hr; 3 - cold rolling from 2.5 mm to 0.85 mm and annealing at 800C for 2 hr; 4 - second cold rolling from 0.85 mm to 0.35 mm and annealing at 1100C for 5 hr.

Orig. art. has: 2 graphs.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 001

Card 2/2 KH

ACC NR: AM7003015 (A) Monograph UR/

Golovanenko, Sergey Aleksandrovich; Meandrov, Lev Vyacheslavovich

Bimetal production (Proizvodstvo bimetallov) [Moscow] Izd-vo "Metallurgiya", 66. 0303 p. illus., biblio., tables. 3,500 copies printed

TOPIC TAGS: bimetal, metallurgy, bimetal production

PURPOSE AND COVERAGE: The properties of bimetals, areas of their application, and their advantages over single-layer metals are analyzed and discussed. Results obtained in theoretical and experimental studies on bimetal production processes are cited and methods of producing bimetals are described; an evaluation of these methods is given. The production of various types of bimetals and the specific features of the manufacture of articles from them are analyzed. The book is intended for engineers and technicians working in metallurgical, machine-building, radio technological, electrotechnical and related industries and for students in technical schools preparing to work in these fields. The authors express their thanks to members of the Laboratory of Bimetals of the Central Scientific Research Institute of Ferrous Metals for assistance rendered in carrying out experimental studies.

Card 1/2 UDC: 621.771.8(06)

ACC NR: AM7003015

TABLE OF CONTENT [abridged]:

SUB CODE: 11/ SUBM DATE: 22Aug66/ ORIG REF: 146/ OTH REF: 024

Card 2/2

GOLOVANENKO, S. I.

Dissertation: -- "Investigation of Road Coverings [illegible] Prepared With Tars and Bitumens in a Cold State." Cand Tech Sci, [illegible] Automobile Highway Inst, Khar'kov, 1953. (Referativnyy Zhurnal--Khimiya, Moscow, [illegible])

SO: Sum 311, 23 Dec. 1954

GOLOVANENKO, S.L., kand.tekhn. nauk,; SIDENKO, V.M., kand. tekhn. nauk

Using tampers for evaluating soil condition and the resistance of soils to the motion of wheeled vehicles. Stroi. i dor. mashinostr. 3 no. 8:20 Ag '58. (MIRA 11:8)

(Soil mechanics)

Golovanenko S.L.

GOLOVANENKO, S.L., dots.

Practical and rating stability of road surfaces. Avt. dor. 21 no.2:19-20 F '58. (MIRA 11:2)
(Pavements)

GOLOVANENKO, Semyon Lavrent'yevich, dotsent, kand.tekhn.nauk; BIRULYA, A.K., prof., doktor tekhn.nauk, zasluzhennyy deyatel' nauki, red.; BENZHUK, V.M., prof., doktor geol.-miner.nauk, retsenzent; VOLKOV, M.I., prof., retsenzent; YEGOZOV, V.P., red.; MAL'KOVA, M.V., tekhn.red.

[Stabilized soil roads.] Dorozhnye pokrytiia iz obrabotannykh gruntov. Pod red. A.K.Birulia. Moskva, Nauchno-tekhn.izd-vo M-va avtomobil'nogo transporta i shosseinykh dorog RSFSR, 1959. 126 p. (MIRA 13:4)

(Road construction)

GOLOVANENKO, S.L., dots.

Causes of the destruction of permeable pavements in spring. Avt. dor. 23 no.4:19-20 Ap '60. (MIRA 13:6)
(Ukraine--Roads--Maintenance and repair)

5(3) SOV/63-4-1-30/31

AUTHORS: Golovanenko, V.I., Kruzhalov, B.D.

TITLE: Synthesis of n-Nitroacetophenone (Sintez n-nitroatsetofenona)

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 1, p 139 (USSR)

ABSTRACT: Several methods for the synthesis of n-nitroacetophenone have been proposed [Ref 1-3]. A simple synthesis is given here. Ethylbenzene is nitrated and the obtained nitroethylbenzene is oxidized by the oxygen of the air under atmospheric pressure. The yield is 90%. The oxidation is carried out in a glass column. Manganese resinate is used as a catalyst. An increase of the catalyst concentration raises the reaction rate only slightly.
There are 2 graphs, and 8 references, 2 of which are Soviet, 3 American, 1 English, 1 Italian and 1 Czechoslovakian.

Card 1/2

Synthesis of n-Nitroacetophenone SOV/63-4-1-30/31

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i organicheskikh produktov (Scientific Research Institute of Synthetic Alcohols and Organic Products)

SUBMITTED: June 20, 1958

Card 2/2

1. GEYZER, I., MALISHEVICH, M., MOSHCHENSKIKOV, N., SHPILEVOY, V., AKHMED, A., GOLOVANENKO, V. V.

2. USSR (600)

4. Radio - Exhibitions

7. Radio amateurs are getting ready for the Eleventh All-Union Radio Exhibition.
Radio, No.10, 1952

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810010-0"

GOLOVANEV, A.

[The work of our country's Party; from the practice of party control of activities in the administration of commercial enterprises in Kharkov Province] Nashe rodnoe partiinoe delo; iz praktiki partiinogo kontrolia deiatel'nosti administratsii torgovykh predpriiatii Khar'kovskoy oblasti. Khar'kov, Khar'kovskoe knizhno-gazetnoe izd-vo, 1954. 39 p. (MLRA 10:4)
(Kharkov Province--Retail trade)

GOLOVANEV, F.

Visit in the U.S.S.R. of scientists and administrative workers of the Ministry of the chemical Industry of the German Democratic Republic. Khim.prom. no.2:120 Mr '56. (MLRA 9:8)
(Chemical industries)

GOLOVAKEV, F.

Conference on the development of polyethylene production. Khim.prom. no.2:120-121 Mr '56. (MLRA 9:8)
(Ethylene)

GOLOVANEV, N.

State Bank business and people. Den. i kred. 19 no.3:34-36 Mr '61. (MIRA 14:3)

1. Nachal'nik otdela kreditovaniya kolkhozov Voronezhskoy kontory Gosbanka.
(Agricultural credit)
(Bobrov District--Collective farms--Fianace)
(Bobrov District--Banks and banking)

GOLOVANOV, V.N.

Continuous rolling of large reinforced concrete products.
Transp.stroi. 9 no.5:14-18 My '59. (MIRA 12:12)

1. Zamestitel' nachal'nika Spetsial'nogo konstruktorskogo byuro "Prokatdetal'" Glavmosstroya.
(Concrete slabs) (Conveying machinery)

GOLOVANEVA, A.F.

5

11.1135
5.2240
11.2131

USSR
S/020/62/142/003/017/027
B106/B110

AUTHORS: Makarov, S. P., Shpanskiy, V. A., Ginsburg, V. A., Zhuk'ovskikh, A. I., Filatov, A. S., Martynova, L. L., Pavlovskaya, I. V., Golovaneva, A. F., and Yakubovich, A. Ya.

TITLE: Reactions of polyfluorinated nitroso-alkanes with unsaturated compounds

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 3, 1962, 596 - 599

TEXT: Trifluoronitroso methane is used as an example of some reactions of polyfluorinated nitroso-alkanes with unsaturated compounds. These addition reactions take place easily (in an autoclave at -70 to 0°C). Monomers and polymers containing 1 mole of nitroso compound per olefin mole, form. Styrene and trifluoronitroso methane also form a compound with the molar ratio 1 : 2 which decomposes into 1 mole of nitroso compound, formaldehyde, and the corresponding imine when heated to 70 - 80°C. Therefore it has the structure $C_6H_5CH(CF_3)-N(O)-CH_2-O-N-CF_3$. Trifluoronitroso methane adds to diphenyl

Card 1/5

Reactions of polyfluorinated. .

ketone even more easily under the formation of $(C_6H_5)_2C(O\text{-}NCF_3)\text{-}CO$ which decomposes when heated to 300°C mainly forming trifluoromethyl isocyanate (Bp. 33°C, yield 35%) and traces of trifluoronitroso methane. The latter also reacts with $R_FC{\equiv}CX$ alkines (X = Cl, Br; R_F = CF_3, CF_2Cl, $CFCl_2$) at room temperature in an autoclave. $ROOCN(O\text{-}NCF_3)NCOR$ forms on heating trifluoronitroso methane with azodicarbonic acid esters to 100 - 150°C under pressure. Diazomethane and trifluoronitroso methane react at -70°C to give a polymeric nitron $[CF_3N(O)CH_2]_n$ under nitrogen separation. Phosphazines and trifluoronitroso methane react violently at -70°C following the scheme $(C_6H_5)_3P{=}N\text{-}N{=}CH_2 + CF_3NO \rightarrow {}^{+}CH_2O + [(C_6H_5)_3P{=}N\text{-}N{=}NCF_3] \xrightarrow{-N_2} (C_6H_5)_3P{=}NCF_3$. The product of this reaction also forms from triphenyl phosphine and trifluoromethyl azide under the same conditions. Trifluoronitroso methane and methyl isocyanide react

Card 2/4

Reactions of polyfluorinated...

vigorously when heated to 25°C in an autoclave to form $O\text{-}NCF_2$ which: $CH_3N{=}C(CH_3){-}CF_2NCF_3$

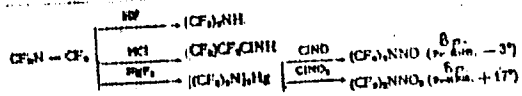
decomposes into trifluorinated dimethyl carbodiimide and methyl isocyanate when heated to 350 - 400°C in vacuo. These reactions demonstrate the great tendency of the N=O groups of trifluoronitroso methane to addition reactions with nucleophilic and electrophilic compounds. For comparison, some additions similar to the above reactions were conducted with polyfluorinated azomethines: $CF_3N{=}CF_2$ (Bp. -33°C) and $CF_3N{=}CFCl$ (Bp. -5°C). In all cases, the additivity of the C=N groups of these compounds was much lower. On reaction of $CF_3N{=}CF_2$ with diphenyl ketene (autoclaved for 12 hrs at 180°C), not addition, but dimerization of the initial substance took place. The dimer also formed in almost quantitative yields by reaction between $CF_3N{=}CF_2$ and pyridine at -70 - 50°C. With aniline, the dimer converts into the anilide of the monomer, when subjected to pyrolysis (>500°C) it dissociates into the monomer ($CF_3N{=}CF_2$). Unlike the polyfluorinated azomethines above, difluoro formimine easily

Card 3/6

Reactions of polyfluorinated...

reacts with diphenyl ketene to form the adduct $(C_6H_5)_2CCO \cdot 2CF_2NH$.

Addition reactions with hydrogen fluoride, hydrogen chloride, and mercuric fluoride following the scheme:



are very characteristic for the polyfluorinated azomethines in question. The tendency of polyfluorinated substances with double bonds to addition reactions with olefins therefore decreases as follows: N=O > N=N > N=C. Table 1 shows the physical constants of the compounds synthesized for the first time. There are 1 table and 12 references: 4 Soviet and 8 non-Soviet. The three most recent references to English-language publications read as follows: E. E. Griffin, R. N. Haszeldine, Proc. Chem. Soc., 1959, 369; 1960, 1151 - 1155; C. E. Griffin, R. N. Haszeldine, J. Chem. Soc., 1960, 1398; J. Crawford, J. Polym. Sci., 45, No. 145, 261 (1960).

Card 4/6

S/020/62/142/003/017/027
B106/B110

Reactions of polyfluorinated...

PRESENTED: June 1, 1961, by M. I. Kabachnik, Academician

SUBMITTED: May 30, 1961

Table 1. Compounds synthesized for the first time.

Legend: (a) Compound; (b) Bp. (Fp.), °C/mm; (c) determined, %; (d) calculated, %; (e) Fp. = Non-distillable yellow oil; ** molecular weight (in acetic acid) : determined 580, calculated for the pentamer 565.

Card 5/6

5(1)
AUTHOR: Golovaneva, A. N. SOV/64-58-7-11/18

TITLE: On the Economic Effect of the Introduction of Continuous and Semi-Continuous Processes in Superphosphate Industry (Ob ekonomicheskom effekte vnedreniya nepreryvnykh i polunepreryvnykh protsessov v superfosfatnuyu promyshlennost')

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 7, pp 430-432 (USSR)

ABSTRACT: Until 1948 superphosphate was produced in the USSR according to the discontinuous method. Mixing kettles according to Lorents, chambers according to Venk, as well as carts according to Besk were used. Since 1948 continuous production processes have been introduced into Soviet industry. A series of technical-economic comparative data are mentioned which characterize the work in some superphosphate works prior to and after the introduction of continuous methods. After reconstruction the output of the Voskresenskiy khimicheskiy kombinat (Voskresensk Chemical Kombinat), Nevskiy and Konstantinovskiy zavod (Nevskiy and Konstantinovka Works) increased by 39-40%, and that of the Rizhskiy superfosfatniy zavod (Riga Superphosphate Works) by 45%, with the number of hands having been reduced. At the Vinnitskiy superfosfatnyy

Card 1/3

On the Economic Effect of the Introduction of Continuous and Semi-Continuous Processes in Superphosphate Industry

SOV/64-58-7-11/18

navod (Vinnitsa Superphosphate Works) the output increased by 75% within the time from 1950 to 1955. The duration of a production cycle was also decreased after the reconstruction. The authors point to the fact that the chambers of the Voskresensk Chemical Kombinat are 3 times smaller than those of the Konstantinovka and Nevskiy Works. In the course of the last years the raw material consumption in the reconstructed enterprises has been reduced. In 1957, for instance, the consumption of phosphate raw material and sulfuric acid amounted in the Konstantinovsk Chemical Works to 1,054 and 1,832 tons per ton P_2O_5, in the Voskresensk Chemical Kombinat to 1,073 and 1,842 tons per ton P_2O_5, and in the Riga Superphosphate Works to 1,066 and 1,792 tons per ton P_2O_5. To improve the quality of the production of the Nevskiy Works new stores must be built. At the Konstantinovka Chemical Works the absorption plant for fluorine gas must be improved. The nine years experience at the Vinnitsa Works makes the appropriate reconstruction of other works possible. The complete changing over of superphosphate production to the

Card 2/3

On the Economic Effect of the Introduction of Continuous and Semi-Continuous Processes in Superphosphate Industry

SOV/64-58-7-11/18

continuous method makes a considerable increase of the output and a decrease of the production costs possible. There are 3 tables.

ASSOCIATION: Nauchnyy institut po udobreniyam i insektofungitsidam imeni Ya. V. Samoylova (Scientific Institute of Fertilizers and "Insectifungicides" imeni Ya. V. Samoylov)

Card 3/3

LEVIN, A.M.; IVANOVA, T.N.; GOLOVANEVA, A.N.

Prospects for the production of arsenic agricultural chemicals. (MIRA 15:5)
[Trudy] NIUIF no.164:101-103 '59.
(Arsenic) (Agricultural chemicals)

FISENKO, Ye.I.; GOLOVANEVA, N.I.

Use of a galvanic apparatus for paper electrophoresis. Lab. delo no. 12:713 '64. (MIRA 18:1)

1. Sanatoriy "Zarya", Sochi.

TSIGLER, V.D.; VINOKUR, S.B.; MITROKHINA, N.S.; Prinimali uchastiye: CHURSINA, L.S.; KRUSHENOK, L.B.; GOLOVANEVA, V.K.; SHISTKA, R.K.

Service of forsterite lightweight bricks in the lining of furnace cars. Ogneupory 28 no.11:504-508 '63. (MIRA 16:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for TSigler). 2. Panteleymonovskiy ogneupornyy zavod im. K. Marksa (for Vinokur, Mitrokhina).

L 36439-66 EWT(1) IJP(c) AT

ACC NR: AP6015417 SOURCE CODE: UR/0051/66/020/005/0750/0752

59
57

AUTHOR: Fedorov, V. L.; Golovanevskaya, L. E.

ORG: NONE

TITLE: Polarization of the spectral lines of helium during excitation by electron impact

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 750-752

TOPIC TAGS: light polarization, helium, spectral line, electron bombardment

ABSTRACT: The polarization of the 4713, 5947, 4922, 6678, 5876, 4471, and 5016 Å lines of helium was investigated. Sealed pentode electron guns containing a BAU-type activated carbon getter and filled with helium served as the radiation source. The current density in the electron beam of the gun did not exceed 7 $\mu A/mm^2$. For the 4713 and 5047 Å lines, the fact that the polarization is observed only above the excitation threshold leads to the assumption that the polarization is related to cascade transitions. For the 4922 and 6678 Å lines, the degree of polarization of both lines is close to theoretical threshold values. For the 4471 and 5876 Å lines, the difference in theoretical and experimental polarization values also is not qualitative in character. In the case of the 5016 Å line, the degree of polarization is very low as compared to the expected value, and is sensitive to pressure changes, making measurements

UDC: 539.186.2

Card 1/2

L 36439-66
ACC NR: AP6015417 2

difficult. The behavior of polarization near the excitation threshold does not differ from the theoretical dependence for all of the spectral lines of helium studied, with the exception of the 5016 Å line. Authors thank Yu. M. Kagan and S. E. Frish for interest shown in the work. Orig. art. has: 2 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 30Dec64/ ORIG REF: 004/ OTH REF: 002

Card 2/2 pb

SOV/58-59-8-18515

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 211 (USSR)

AUTHOR: Golovanevskiy, E.I.

TITLE: On the Formation of Electron Packets

PERIODICAL: Izv. Leningr. elektrotekhn. in-ta, 1958, Vol 36, pp 44-56

ABSTRACT: The article defines more precisely some properties of the coherent radiation of electron packets, which occurs when these packets have a great density and small dimensions in comparison with the wavelength. The conditions of the greatest effectiveness of this radiation are also formulated. Three basic methods of forming electron packets (packing) are examined: 1) By modulating the velocity of the electron flux during its passage through the cavity of the excited resonator, with the ensuing grouping of the flux; 2) By velocity modulation in the traveling wave of the electric field, with the simultaneous grouping of the electrons; 3) By cutting off the current in the diode. For each of these methods the possible number of electrons in a packet of given size is approximately estimated, as well as the duration of the packet's existence without substantial modification of its geometry, and the power necessary to form

Card 1/2

ACCESSION NR: AT3012837 S/2966/62/000/000/0025/0033

AUTHORS: Golovanevskiy, E. I.; Govardovskiy, V. I.

TITLE: Model study of electron-optical system with automatic field correction on space charge effect

SOURCE: Voprosy* elektroniki i elektrodinamiki sverkhvy*sokikh chastot. Taganrog, 1962, 25-33

TOPIC TAGS: electron focusing, electron beam trajectory, radius of curvature, potential gradient

ABSTRACT: A model study has been made to determine the electron focusing form and field for given electron beam trajectories using an electrolyte with current input electrodes. The direct electron-optical problem is solved in the model study under conditions of orthogonality for a given boundary and given radii of curvature along the trajectory. The condition relating radius of curvature to the potential gradient is given by : $\rho = 2U/\frac{dU}{dn}$.

The cathode current density for the selected model is expressed by

Card 1/2

ACCESSION NR: AT3012837

$$I_n = \frac{4}{9}\,;\; O_n = \frac{S_n}{S_n}\cdot\frac{V_\delta^{3/2}}{x_\delta^2}\cdot\frac{1}{\sqrt{V_n}}\,;$$

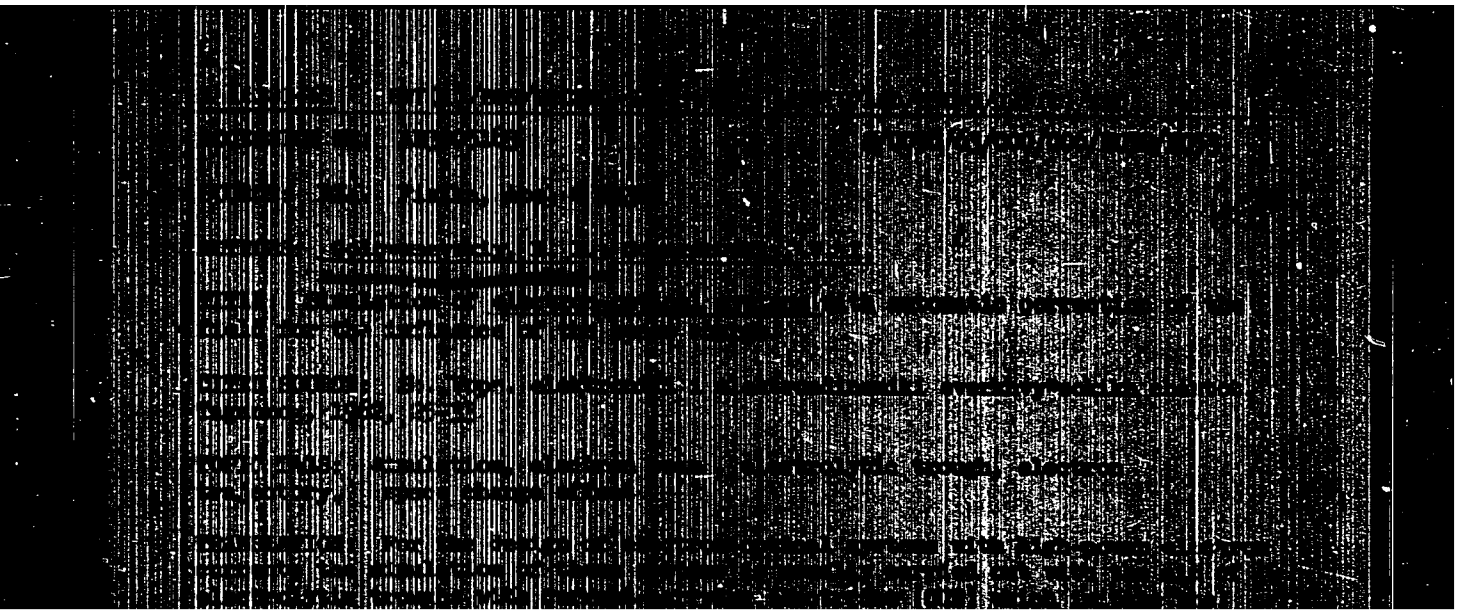
where V_δ - potential near cathode at distance x_δ , V_n - potential on the electrolyte surface, O - volume, S - cross-sectional area. It is seen from the above expression that the input current appears as a function of the corresponding potential V_δ , V_1, ...V_n on the electrolyte surface. Thus, in the model study system, one can use a feed-back method whereby the current can be controlled by this very potential. A detailed block-schematic is made of the model, and its analysis is shown to lead to simple control systems requiring no more than 30-40 cells. Orig. art. has: 11 formulas and 5 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 001

Card 2/2



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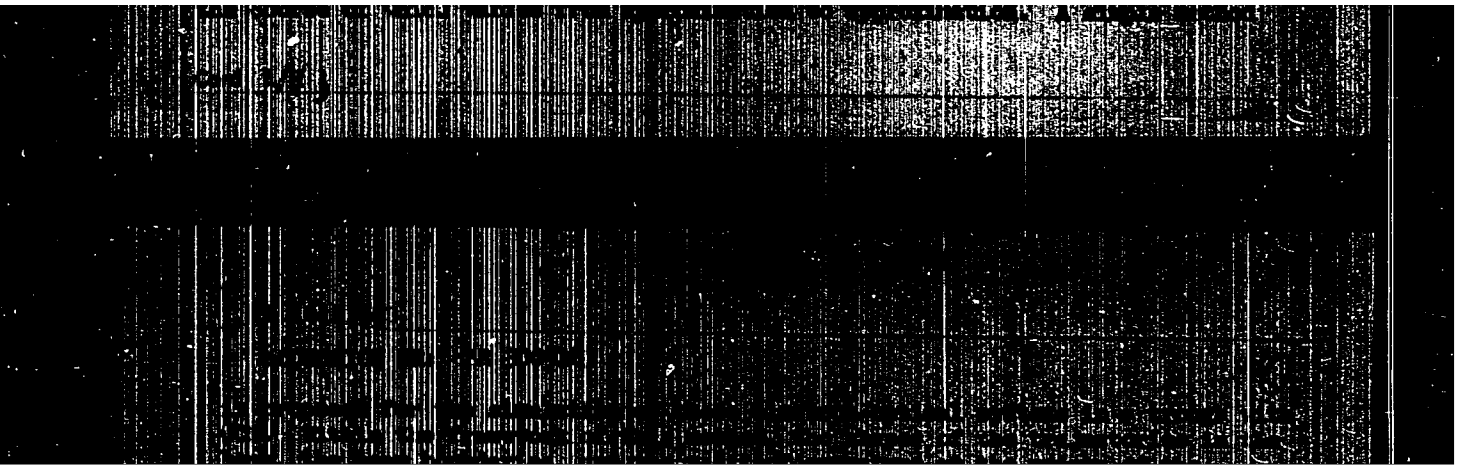

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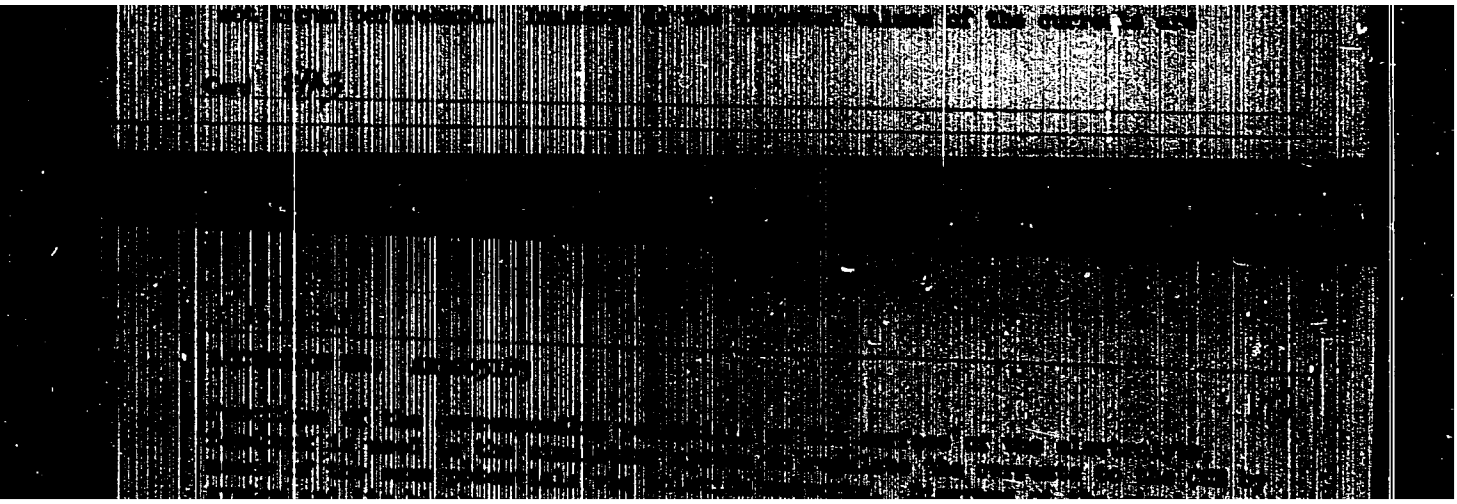


APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810010-0"

ACCESSION NR: AT3012638 S/2966/62/000/000/0034/0040

AUTHOR: Golovanevskiy, B. I.

TITLE: Characteristics of excitation in coherent currents

SOURCE: Voprosy* elektroniki i elektrodinamiki sverkhvy*sokikh chastot, Taganrog, 1962, 34-40

TOPIC TAGS: radio-frequency generator, electron tube, triode, tetrode, excitation oscillation, half-wave

ABSTRACT: In radio-frequency generator lamps composed of multiple electron tubes (such as triodes and tetrodes) there exist input and output resonance loads which are equivalent to excitation oscillations in general coherent load currents. The in-phase currents in such lamps amplifying electromagnetic oscillations are discussed and their characteristics evaluated. It is assumed that the cascade structure ensures equal corresponding reactive components, thus excluding their effects on the variable power. The method selected for calculating the system of coherent excitations is based on the application of Lagrange's function which demonstrates the effectiveness of plane resonator excitations on the coherent

Card 1/2

ACCESSION NR: AT3012838

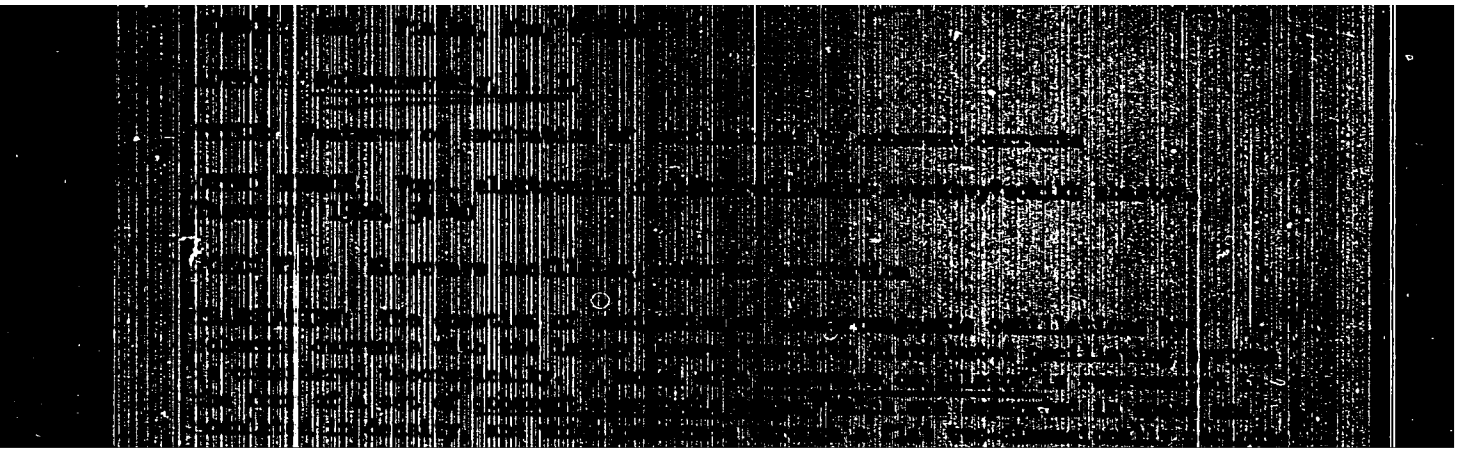
current. The analysis leads to an expression for the amplitude of spatial harmonics A_{mn} where m,n= number of spatial harmonic half-waves. It is shown that the resonator capacity increases as the square of the excitation current, thus $P = \alpha A^2_{m,n}$, where α is a coefficient of proportionality. Orig. art. has: 16 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 07Oct63 ENCL: 00

SUB CODE: EE NO REF SOV: 001 OTHER: 000

Card 2/2



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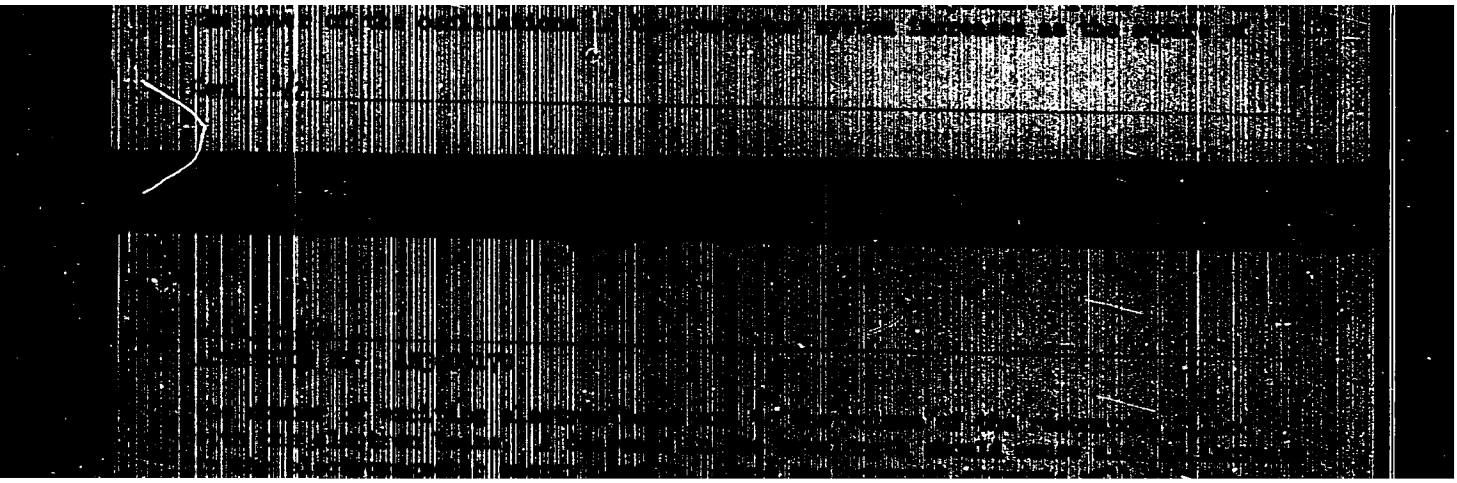

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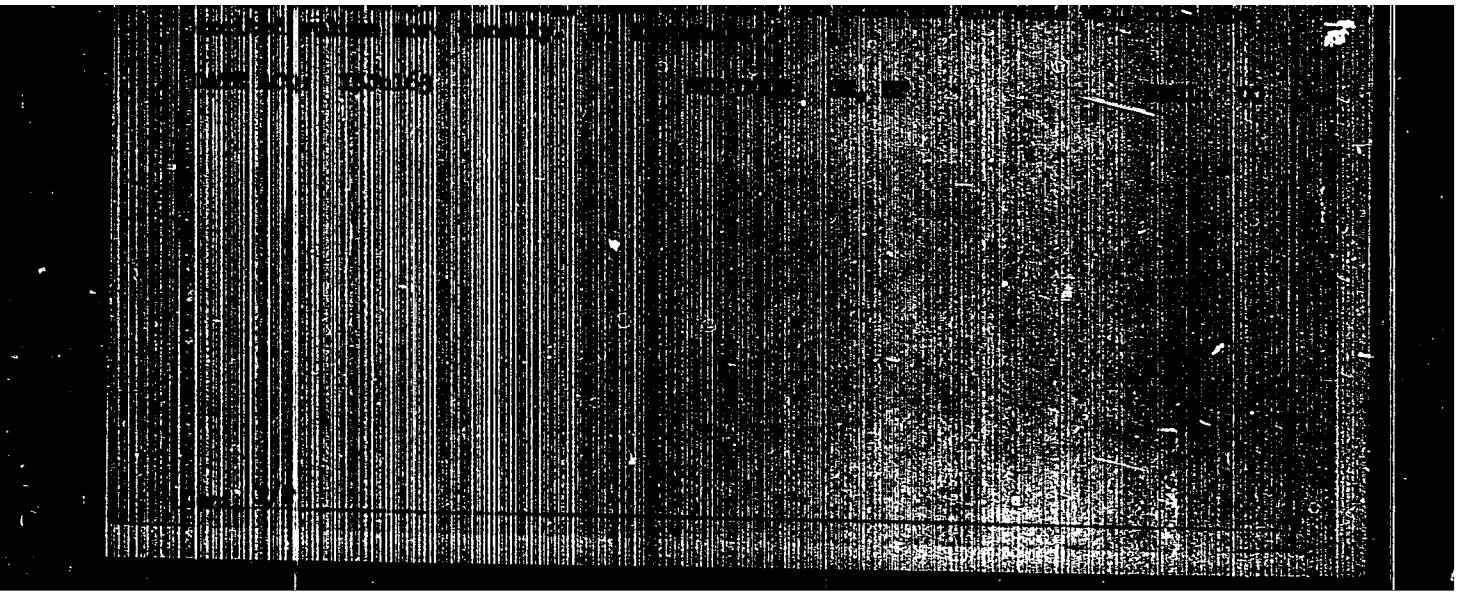

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810010-0"

GOLOVANEVSKIY, I.S.

The correct way to increased labor productivity. Vest.sviazi 17 no.2:19-21 F '57. (MLRA 10:3)

1. Nachal'nik sluzhby magistral'nykh svyazey Minskogo tsentral'nogo telegrafa. (Minsk--Telegraph)

SOV/58-59-5-11213

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 183 (USSR)

AUTHOR: Golovanevskiy, E.I.

TITLE: Some Calculations of Electron-Tube Vibrating Voltages

PERIODICAL: Izv. Leningr. elektrotekhn. in-ta, 1958, Vol 36, pp 150 - 157

ABSTRACT: The author estimates theoretically the order of the magnitude of the variable voltages arising in the tube load when the tube operates in vibrating devices. On the basis of a Lagrange equation, he calculates the deflection arising during vibration for the case of a place rectangular electrode. By introducing equivalent constants of the material, the calculation results are extended to plane electrodes having a mesh structure. Assuming the cathode to be immobile and considering the grid deflection as the relative change in the cathode-grid distance, the author derives expressions for the vibrating current and voltages in the anode load of the tube. It is shown that the results of measuring vibration noise in tubes of the 6S5D type agree as regards their order of magnitude with the results of the calculation. The proposed method makes it possible to determine the order of magnitude

Card 1/2

Some Calculations of Electron-Tube Vibrating Voltages SOV/58-59-5-11213

of vibration noise when designing tubes with plane electrodes, as well as to select the dimensions of electrodes satisfying the permitted level of vibration noise. The described method can also be extended to electrodes having a cylindrical or rod form.

V.V. Karizhenskiy

Card 2/2

20928

S/057/61/031/003/012/019
B125/B209

26.2721

AUTHORS: Golovanivskiy, K. S. and Kuzovnikov, A. A.

TITLE: Pressure of an inhomogeneous electric h-f field upon the plasma in the positive column of a gas discharge

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 3, 1961, 343-347

TEXT: The present paper is a study of the effect of an inhomogeneous alternating electric field upon the plasma in the positive column of a low-pressure discharge. An inhomogeneous electric h-f field exerts a steady pressure upon the plasma, thus compressing it toward the discharge axis. The authors studied the most important qualitative fundamentals of this so far not investigated effect. Fig. 1 shows the experimental arrangement. A d-c creep discharge was excited in a 50-cm long cylindrical tube of 6 cm diameter. The experiments were made in argon and air at a pressure of $p = 3.7 \cdot 10^{-1}$ mm Hg. The current was kept at a constant voltage of 5 ma in both gases. The movable probe 3_1 allowed to measure the plasma parameters at various distances from the tube axis. The stationary probe

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3_2 was used to control the results. Three electrodes were soldered to the discharge tube: a disk-shaped anode A, a disk cathode K_2, and a heater cathode K_1. The discharge was supplied from a high-voltage source U_1 across a variable resistor R_1. The h-f circuit of the arrangement consisted of a 100И (100I)-type generator, a broad-band amplifier (1), and a ВКС-7б (VKS-7b) cathode voltmeter. The inhomogeneous electric h-f field was generated by two copper rings КП, and the h-f voltage at the amplifier output was measured with a VKS-7b cathode voltmeter. When the h-f field was applied, the plasma which usually filled the entire volume of the discharge tube, contracted within the active zone of the rings contracted to the axis of the tube. The authors did not succeed in measuring the distribution of the electron density across the radius of the column in the compressed and in the uncompressed discharge. The degree of compression of the column as depending on various parameters was measured quantitatively by photographing and photometric evaluation of the gap between the rings. By this method, the authors determined the dependence of the pinch value on the amplitude of the h-f potential applied to the

ring, and on frequency. The respective curves are plotted ir Figs.4 and 5. In the case of a pinched column, the gas in the column was much brighter, and the discharge current rose somewhat. Fig. 6 illustrates the results of photometric evaluation for three different amplitudes of the h-f potential at a frequency of f = 100 kc/sec. This figure depicts the distribution of the luminescent intensity over the radius of the column as depending on the amplitude of the potential of the ring. The quantity S plotted on the ordinate is proportional to the logarithm of intensity; f = 100 kc/sec, discharge in air. $U_{\sim}(v)$: 1 - 115, 2 - 60, 3 - 0. Only an electric component of the electromagnetic alternating field can exert pressure upon the plasma. The force acting upon the electron gas per unit volume amounts to $\bar{F} = \frac{2n_e e^2}{m\omega^2} \nabla E^2$. e and m are the electron charge and mass, respectively, ω is the frequency of the field, and E is the amplitude of the electric field at a given point. A quasisteady electric field acts upon a plasma with the same pressure as a standing electromagnetic wave with amplitude E of the electric field. A standing electromagnetic wave

Pressure of an inhomogeneous...

need not necessarily enter the system pinching the plasma. The raised ionization in the pinch may arise from two causes: a) rising number of ionizations due to acceleration of the electrons in a h-f field, b) accumulation of carriers in the pinched region since the latter loses the contact to the walls. The authors thank L. M. Khayurov for having assembled the experimental arrangement and for having made part of the measurements. There are 6 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: H. Boot, S. Self, R.-S. Harvie, J.Electron.and Control, 4, no.5, 434, 1958; H. Boot, R.-S. Harvie, Nature, London, 180, 1187, 1957.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo universiteta (Division of Physics of Moscow University)

SUBMITTED: May 12, 1960

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S/057/61/031/007/021/021
B104/B206

AUTHORS: Golovanivskiy, K. S., and Kuzovnikov, A. A.

TITLE: Pinch effect of the positive column of a gas discharge through a high-frequency, inhomogeneous electric field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 7, 1961, 890 - 892

TEXT: A cylindrical, positive column with ambipolar diffusion is studied under the assumption that all quantities are only functions of r. It is further assumed that the motion of charged particles of the type K in an inhomogeneous high-frequency field may be described by the potential $\Phi_k = e_k E^2/2m_k(\omega^2 + \nu_k^2)$ (1), and that Φ_k increases from the center to the periphery. The ion- and electron currents towards the wall are determined by the diffusion current, the discharge current in the electric field (E_r), and the current in the field of the potential (1).

$$\left.\begin{aligned} j_{i_r} &= -eD_i\nabla n + eb_i nE_r - eb_i n\nabla\Phi_i, \\ j_{e_r} &= eD_e\nabla n + eb_e nE_r + eb_e n\nabla\Phi_e. \end{aligned}\right\} \quad (2)$$

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holds for the ion- and electron current densities towards the wall. D is the diffusion coefficient, b the mobility and n the concentration of ions and electrons. In the stationary case, $j_{ir} = -j_{er}$, and the expression

$$E_r = -\frac{\nabla n}{n}\frac{D_e - D_i}{b_e - b_i} - \frac{b_e\nabla\Phi_e - b_i\nabla\Phi_i}{b_e - b_i}. \quad (3)$$

is found for the radial electric field. Thus, the authors obtain

$$j_{ir} = -e\nabla nD_{am} - en(\nabla\Phi_e + \nabla\Phi_i)\frac{b_eb_i}{b_e + b_i}. \quad (4)$$

from (2), where D_{am} is the ambipolar diffusion coefficient

$$D_{am} = \frac{b_iD_e + b_eD_i}{b_e + b_i}. \quad (5)$$

As may easily be seen, an application of an inhomogeneous high-frequency field to the positive column leads to a change of the ion- and electron currents towards the wall in the order of magnitude

$$|\Delta j_{ir}| = |\Delta j_{er}| = en(\nabla\Phi_e + \nabla\Phi_i)\frac{b_eb_i}{b_e + b_i}. \quad (6)$$

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Thus, an additional radial field is produced, compensating the difference in the mobilities and the Φ_k values for ions and electrons. If the amplitude E of the high-frequency field is selected in such a way that on the wall the inequation

$$-\frac{\nabla n}{n} D_{a\perp} = \frac{b_e b_i}{b_e + b_i} (\nabla \Phi_e + \nabla \Phi). \qquad (8)$$

is fulfilled, the charged particle current, towards the wall is stopped by the formation of a potential barrier of the form (1). A further increase of E reduces the radius of that zone in which (8) is fulfilled. This produces a contraction of the positive column. An estimation showed that for the constriction of the positive column to 1/3 in He with $n \sim 5 \cdot 10^8$ cm^{-3}, $T_e \sim 30,000^\circ$K and $r_0 = 3$ cm by an inhomogeneous field of a thin ring at a frequency of 1 megacycle and a capacitance of the ring with respect to the earth of C = 5 cm, a high-frequency voltage at the ring relative to the earth of 50 - 100 v is necessary. The authors thank V. Ye. Mitsuk for the valuable discussion. There are 3 Soviet-bloc references.

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S/057/61/031/007/021/021
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ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosuniversiteta (Physics Division of Moscow State University)

SUBMITTED: February 17, 1961

Card 4/4

GOLOVANIVSKIY, K. S.; KUZOVNIKOV, A. A.

Lower limit of a high-frequency quasi-potential in a positive plasma column. Izv. vys. ucheb. zav.; radiofiz. 5 no.5:933-944 '62. (MIRA 15:10)

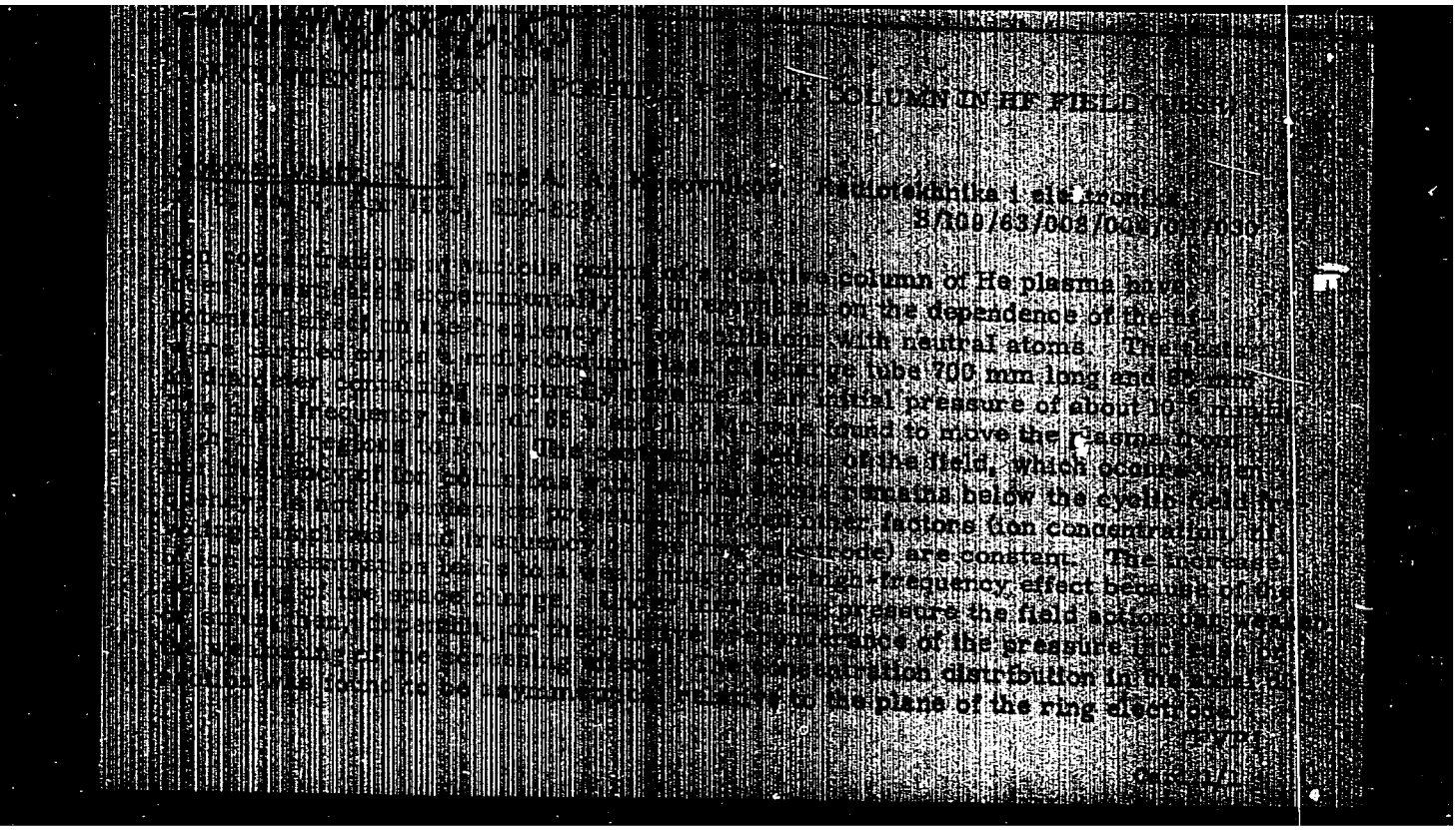
1. Moskovskiy gosudarstvennyy universitet.

(Plasma(Ionized gases))

GOLOVANIVSKIY, K.S.; KUZOVNIKOV, A.A.

Lower frequency limit of the high-frequency quasi-potential in a helium or krypton plasma. Izv. vys. ucheb. zav.; radiofiz. 6 no.5:964-972 '63. (MIRA 16:12)

1. Moskovskiy gosudarstvennyy universitet.



ACCESSION NR: AP4020572 S/0057/64/034/003/0454/0457

AUTHOR: Golovanivskiy, K.S.; Dugar-Zhabon, V.D.; Kuzovnikov, A.A.

TITLE: Space potential in a stationary plasma under the influence of a nonuniform high frequency field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 454-457

TOPIC TAGS: plasma, plasma diagnostics, plasma diffusion, ambipolar diffusion, high frequency field plasma

ABSTRACT: This paper is one of a series (K.S.Golovanivskiy and A.A.Kuzovnikov, ZhTF 31, No.3, 343, 1961; No.7, 890, 1961; Izv.Vuzov, Radiofizika, 5, No.5, 1962; No.5, 1963; Radiotekhnika i elektronika, 8, 4, 1963). In the earlier work it was shown that the charged particles in a plasma subjected to a nonuniform high frequency field experience a force directed opposite to the gradient of the amplitude of the high frequency field. Here it is deduced that if a positive column plasma be subjected to a high frequency field, the amplitude of which increases with distance from the axis, the plasma will be radially compressed and the radial potential distribution within the plasma will be altered by effects of ambipolar diffusion. Near the axis, where

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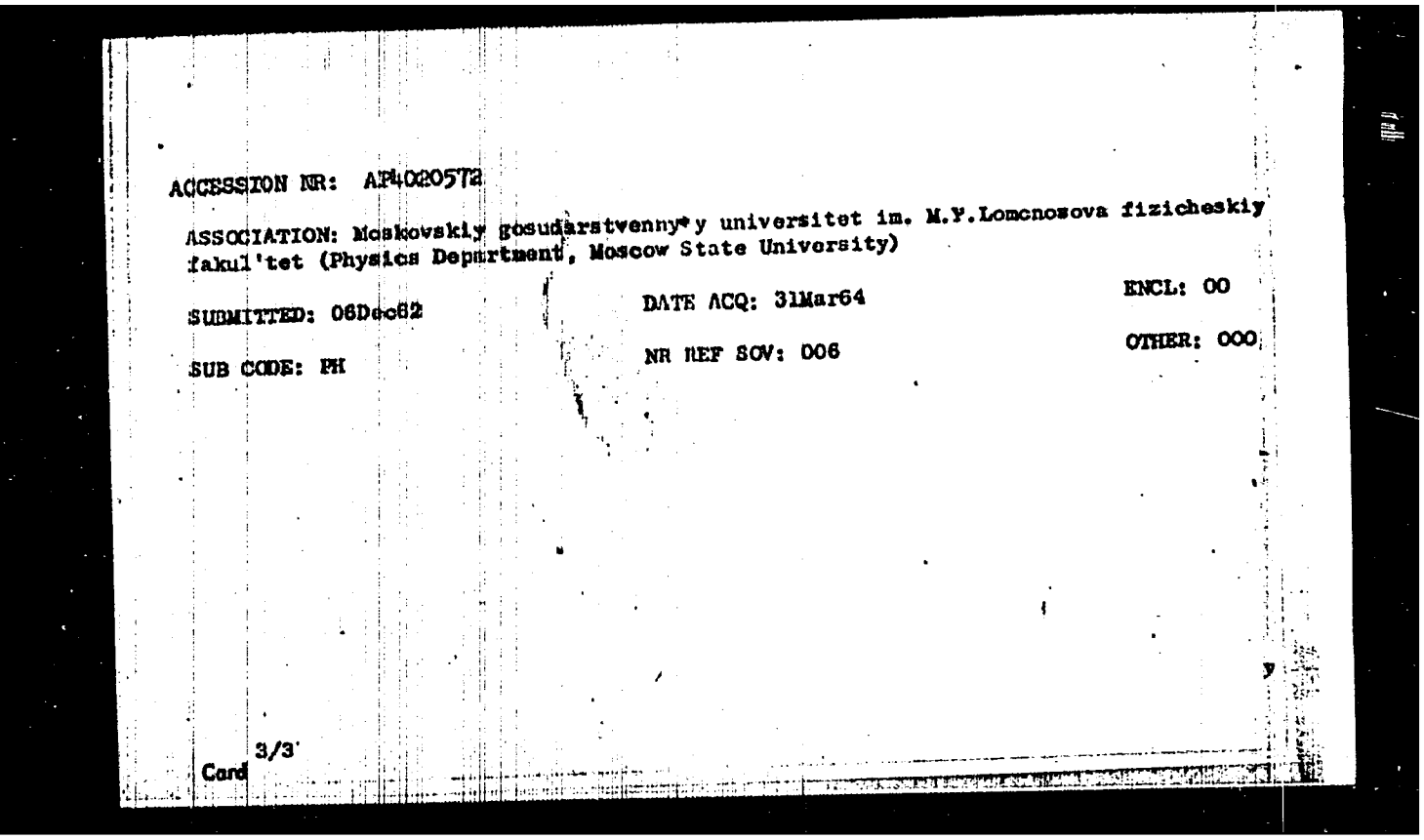
ACCESSION NR: AP4020572

the field is weak, the potential should be a linear function of the logarithm of the density, but at greater distances, a term proportional to the square of the high frequency field amplitude should make itself felt. A helium glow discharge at 0.31 mm Hg in a 6.6 cm diameter glass tube was subjected to a 1.3 megacycle field; applied to a 2.3 cm wide brass ring circling the discharge tube. The ring electrode was pierced to admit a movable cylindrical probe, with which the radial distribution of density and potential was determined. The ion density was obtained from the ion portion of the probe characteristic, and the potential was measured with the aid of an auxiliary probe fixed in an undisturbed portion of the plasma. Radial density distribution curves obtained with and without the high frequency field showed a considerable compression of the plasma by the field. The potential distribution followed the log density distribution out to a radius of about 2.4 cm, after which large deviations occurred. These deviations were such as might be accounted for by the theoretical term proportional to the square of the high frequency field amplitude, but a quantitative comparison could not be made because the amplitude of the high frequency field was not accurately known. Orig.art.has: 4 formulas and 2 figures.

Card 2/3



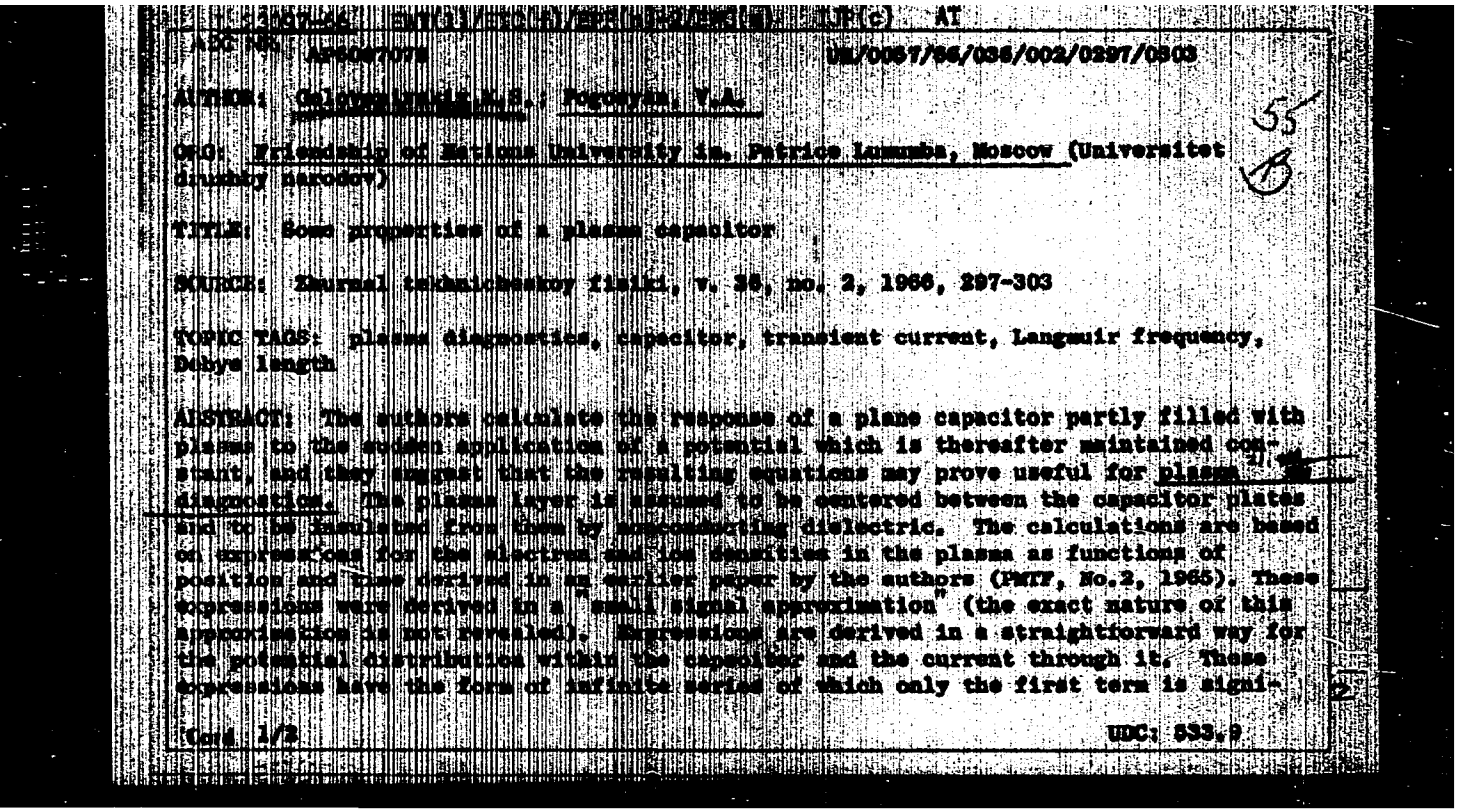
ACCESSION NR: AP4020572

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova fizicheskiy fakul'tet (Physics Department, Moscow State University)

SUBMITTED: 06Dec62 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: PH NR REF SOV: 006 OTHER: 000

Card 3/3



ACC NR: AP6007078 UR/0057/66/036/002/0297/0303

AUTHOR: Galeyev, R. G.; Rogozhin, V. A.

ORG: Friendship of Nations University im. Patrice Lumumba, Moscow (Universitet druzhby narodov)

TITLE: Some properties of a plasma capacitor

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 2, 1966, 297-303

TOPIC TAGS: plasma diagnostics, capacitor, transient current, Langmuir frequency, Debye length

ABSTRACT: The authors calculate the response of a plane capacitor partly filled with plasma to the sudden application of a potential which is thereafter maintained constant, and they suggest that the resulting equations may prove useful for plasma [illegible] diagnostics. The plasma layer is assumed to be centered between the capacitor plates and to be [illegible] from them by [illegible] dielectric. The calculations are based on [illegible] for the [illegible] current in the plasma as functions of position and time derived in an earlier paper by the authors (PMTF, No.2, 1965). These expressions were derived in a "small signal approximation" (the exact nature of this approximation is not revealed). Expressions are derived in a straightforward way for the potential distribution within the capacitor and the current through it. These expressions have the form of infinite series of which only the first term is signi-

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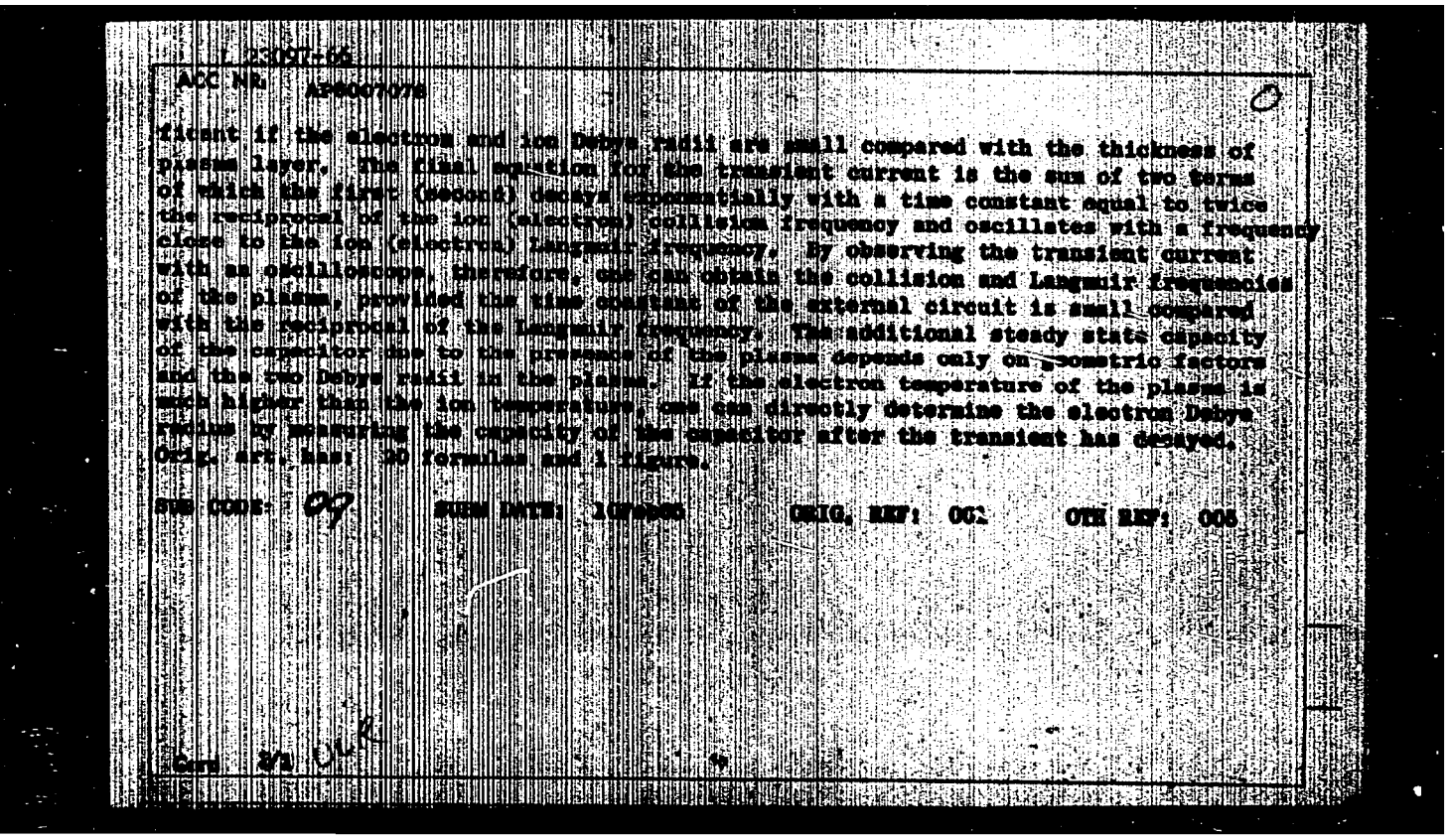

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ACC NR: AP6007078

fficant if the electron and ion Debye radii are small compared with the thickness of plasma layer. The final expression for the transient current is the sum of two terms of which the first (aperiodic) decays exponentially with a time constant equal to twice the reciprocal of the ion (electron) collision frequency and oscillates with a frequency close to the ion (electron) Langmuir frequency. By observing the transient current with an oscilloscope, therefore, one can obtain the collision and Langmuir frequencies of the plasma, provided that time constant of the external circuit is small compared with the reciprocal of the Langmuir frequency. The additional steady state capacity of the capacitor due to the presence of the plasma depends only on geometric factors and the two Debye radii in the plasma. If the electron temperature of the plasma is much higher than the ion temperature, one can directly determine the electron Debye radius by measuring the capacity of the capacitor after the transient has decayed. Orig. art. has: 20 formulas and 1 figure.

SUB CODE: 09 SUBM DATE: 10Feb66 ORIG. REF: 002 OTH REF: 005

Card 2/2 UDC

CHMYR', Vitaliy Dmitriyevich; SKVARONSKIY, B.I., nauchnyy red.; GUSEVA, L.F., red.; GOLOVANIYEVSKAYA, E.N., red.; NESMYSLOVA, L.M., tekhn. red.

[Laboratory tests of building materials; for masons]Laboratornye raboty po ispytaniiu stroitel'nykh materialov; dlia kamenshchikov. Moskva, Proftekhizdat, 1962. 103 p. (MIRA 15:12)
(Building materials--Testing)

SEMENOV, Andrey Petrovich; YARMOLINSKIY, A.S., nauchnyy red.; GOLOVANITSKAYA, K.N., red.; BARANOVA, N.N., tekhn.red.

[Mechanization and automation of woodworking] Mekhanizatsiia i avtomatizatsiia derevoobrabotki; metodicheskoe posobie. Moskva, Proftekhizdat, 1963. 54 p. (MIRA 16:5)
(Woodworking machinery) (Automatic control)

GOLOVANKOV, N.

For the maximum mobilization of hidden potentialities. Fin. SSSR 21 no.2:65-66 F '60. (MIRA 13:1)

1. Nachal'nik finansovogo otdela Altayskogo sovnarkhoza.
(Altai Territory--Machinery industry--Finance)